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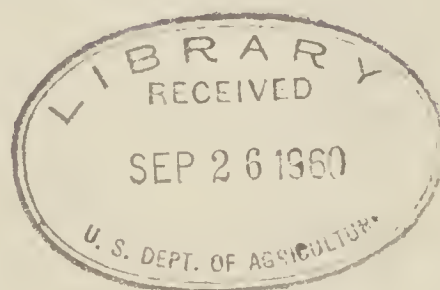
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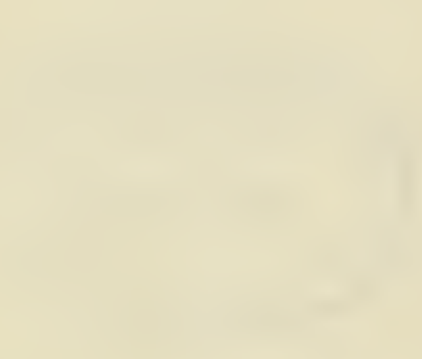
REPORT OF
COOPERATIVE BLISTER RUST CONTROL WORK
IN THE EASTERN STATES
DURING 1928.

By
E. C. Filler and K. K. Stimson



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FOREWORD

This report is based on a summarization and analysis of the yearly BRE3a forms submitted by the state leaders, and on general observations made by the federal supervisor. It summarizes the control work for all years, and especially gives the main facts regarding the 1928 activities. No attempt has been made to suggest remedies for any weaknesses, as detailed cooperative plans have been prepared for the 1929 work in each state, with the object of strengthening the organization and the work in general. As the state and federal offices have copies of these plans, it is not thought advisable to duplicate such information here.

SUMMARY OF BLISTER RUST CONTROL ACTIVITIES IN NEW ENGLAND
AND NEW YORK DURING THE PERIOD 1918 to 1928, INCLUSIVE.

Policy

During the period 1918 to 1921 inclusive, the federal Government co-operated with the states, on a dollar for dollar basis, in experimental work to control blister rust. This work was conducted in each state under a co-operative agreement between the United States Department of Agriculture and the authorized state regulatory agency, the latter usually being the state forestry department. The control work was directed by the state officials under the general supervision of the Government, which paid a part of the Ribes eradication costs.

In 1922, a new program to secure the general application of control measures was initiated by the United States Department of Agriculture, the state regulatory agencies and the state extension services. This program has been in operation since that time. The object of this cooperative work is to accomplish the control of blister rust by furnishing pine owners the expert advice, leadership, and supervision needed to secure prompt and effective local eradication of Ribes in the pine growing regions. The Government is primarily responsible for furnishing each cooperating state with one or more trained agents, who function as leaders in control work. In addition, the Government conducts experiments and demonstrations to improve control practices, obtains data on spread of the rust, and gives general supervision and regional leadership. All federal co-operative expenditures are offset by state expenditures of at least equal amount. The cooperating state regulatory agencies are responsible for; (1) The administrative direction of the cooperative employees furnished by the Government; (2) Cooperating with counties, townships, associations, and individuals in control work; (3) Providing adequate supervision and checking of local eradication of Ribes to secure effective destruction of such bushes, and; (4) Enforcing any necessary regulatory measures. The state extension services cooperate, wherever practicable, by making available such facilities of their organizations as will promote the control program.

The Scope Of The Problem

White Pine

According to a forest type survey made by our office in 1927, there are 8,221,167 acres of pine land in New England and New York classified as follows: Pure pine, (80 percent or over) 2,679,587 acres; Mixed pine (21 - 79 percent pine in mixture) 2,774,507 acres, and; Pine restocking in types other than pine, 2,767,073 acres. Of the total pine acreage, 75.6 percent is located in the three states of Maine, New Hampshire and New York. In addition to the above total pine area, there is a vast acreage containing less than 20 percent pine in mixture with other species. Also, millions of white pine are being planted each year. The following map shows the amount and distribution of pure and mixed (30-79%) white pine based on town units in New England and New York.

Insert white pine map here.

Ribes

Wild Ribes occur more or less generally distributed throughout the white pine regions of New England and New York, but vary locally as to abundance, species and site. Seven indigenous species have been encountered in control work, three being gooseberries and the other four currants (excluding Ribes vulgare which is considered an escaped cultivated red currant.) In certain sites, the Ribes number 100 or more per acre and in others are entirely absent. The aggregate, however, represents many millions of such bushes. It has been determined that shade is an important factor in eliminating and suppressing Ribes, that Ribes seed remain dormant and viable in the duff for years, and that disturbance of the duff by logging, fire or animals favors the germination of such dormant seeds. Therefore, Ribes are found most abundant in open situations; such as cut-over or burned areas, pastures, swamps, fence rows, etc. The cultivated Ribes problem is indicated by the 454,601 cultivated bushes that have been destroyed in applying control measures since 1918. The amount and distribution of wild Ribes per acre, based on town units, is indicated on the following map.

Insert Ribes map here.

Infection

Blister rust infection is general throughout the commercial white pine range of New England and New York. Over extensive unprotected areas, from 1 to 20 per cent or more of the pines are infected; and in many local pine tracts from 50 to 100 per cent of the trees are dead or dying. The amount of disease varies considerably in different localities, and appears to be closely related to the abundance of Ribes. In the counties of Essex and Warren, New York and in the upper Connecticut valley region where Ribes are generally profuse, pine infection is also heaviest; 11 to 20 per cent or more of the trees being diseased. In southern New England and southern New York less than one per cent of the pine are infected, except in a few limited areas. The distribution and amount of disease, based on township units, is shown in the following map.

Insert infection map here.

During 1920, strip line infection surveys were made in New Hampshire, Maine, Vermont, New York and Massachusetts. The pines on road wide strips, totaling 165.9 miles in length, were examined. A total of 42,274 pines were inspected and 10.2 per cent were found diseased. In addition, 256 plots, totaling 71.8 acres, were laid out adjacent to the strips; 27.7 per cent of the 23,461 pines on these plots were infected. These data may be regarded as conservative of conditions in unprotected areas where Ribes are generally distributed; as since 1920 the results of the heavy wave of infection in 1919 have become increasingly conspicuous. Another heavy infection wave occurred in 1925.

Additional infection information was secured during 1925-1927 by the blister rust agents. Studies made by examining the first ten infected pines found on each of 415 representative pine areas in New England and New York showed cankers originated on the 4150 infected pines as follows: Total cankers 10,428, of which 22 per cent originated up to 1917, 43 per cent during 1918-1921, and 35 per cent since 1921. The percentage of infection since 1921 is probably too low to be representative of true conditions. Many of the 1925 cankers were probably not visible at the time the study was made, also in selecting infected trees, the agents naturally picked out specimens readily visible, rather than trees containing only incipient cankers.

Results Accomplished in Blister Rust Control.

Education

Educational activities in blister rust control are necessary to create general and favorable attention, interest, and desire. About 10 to 15 percent of the agents' time is given to such work. From 1922 to 1928 inclusive, the educational activities, definitely reported, are as follows:

Exhibits placed.....	4046	Publications distributed.....	439,134
Items published.....	7609	Posters and signs placed.....	54,126
Meetings addressed.....	3627	Field Demonstration meetings.	2,896
Attendance..	243,355	Attendance.	25,609

In addition, thousands of mimeographed articles have been distributed, many roadside demonstrations placed, scattered infected trees tagged, radio talks given, etc.

Service

Systematic personal service work, embracing personal interviews and demonstrations, is essential to secure general, prompt, and effective cooperation in applying control measures by individuals and towns. Such work occupies a large part of the agents' time, averaging 16.8 percent in 1928. The amount of this work by the agents during the period 1922 to 1928, inclusive, is as follows:

Initial interviews ...	91,671	Individuals instructed in the disease ..	35,110
Follow up calls.....	45,825	Individuals instructed in control methods	21,684

Individual and Town Cooperation in Ribes Eradication

Effective educational and service activities have resulted in willing and generous public cooperation in blister rust control. This work represents the most outstanding example of successful public participation in pest control, through non-compulsary measures. The amount of individual and town cooperation in Ribes eradication is as follows:

<u>Period</u>	<u>No. Individuals</u>	<u>Individual Expenditures</u>	<u>No. Town Appropriations</u>	<u>Town Money Appropriated</u>
1918-1921	381	\$ 40,956.22	166	\$ 27,560.00
1922-1928	25,273	303,052.75	853	264,235.57
Totals	25,654	\$344,008.97	1019	\$291,795.57

Section 1: Introduction

1.1 Overview

The purpose of this document is to provide a comprehensive overview of the project's objectives, scope, and deliverables. It is intended for use by all stakeholders involved in the project, including the project manager, team members, and sponsors.

The project is a complex endeavor that requires the coordination of resources, time, and budget. The project manager is responsible for ensuring that the project is completed on time, within budget, and to the satisfaction of the stakeholders.

The project is divided into several phases, each with its own set of tasks and deliverables. The project manager will provide regular updates on the project's progress and any changes to the plan.

1.2 Objectives

The primary objective of the project is to develop a new product that meets the needs of the market. This involves conducting market research, identifying key features, and developing a prototype. Other objectives include establishing a timeline, allocating resources, and managing risks.

The project manager will ensure that the project is completed on time, within budget, and to the satisfaction of the stakeholders.

Section 2: Project Management

The project manager is responsible for the overall management of the project, including the development of the project plan, the allocation of resources, and the monitoring of progress. The project manager will also be responsible for communicating with the stakeholders and providing regular updates on the project's status.

Task	Start Date	End Date	Status	Assignee
Task 1	2023-01-01	2023-01-15	Completed	John Doe
Task 2	2023-01-16	2023-01-30	In Progress	Jane Smith
Task 3	2023-02-01	2023-02-15	Not Started	Mike Johnson
Task 4	2023-02-16	2023-02-28	Not Started	Sarah Lee

Each cooperating company, association, or institution is classified as one individual cooperator. The individuals listed above actually furnished labor or money to eradicate the Ribes on their properties. Also, thousands of additional owners permitted the destruction of their cultivated bushes without compensation. The excellent public support in this respect is evidenced by the fact that although 362,883 cultivated Ribes were destroyed during the period 1922 to 1928 inclusive, yet it was only necessary to compensate 606 owners \$7,572.63 for 21,873 bushes. In other words, based on the total number of cultivated Ribes eradicated, compensation was paid for only 60 percent of the total bushes and averaged only 2.08 cents per bush. In addition to the above direct cooperation, thousands of individuals gave their general support and individual aid to the control program.

Individual cooperation in wild Ribes eradication has been solicited in all the Northeastern States. However, such efforts have been restricted in New Hampshire where the work is done chiefly in cooperation with towns and in Rhode Island where, except during 1920, state funds have been used to pay the entire cost of the limited amount of necessary control work. In New England and New York during the period 1922 to 1928 inclusive, the cooperative Ribes eradication work with 25,273 individuals resulted in 1,540,133 acres being cleared of 29,149,922 Ribes and 229,177 cultivated bushes at a total cost of \$498,163.66, or a per acre cost of 32.3 cents. This cooperative work represents 26.5 percent of the total area eradicated of Ribes in New England and New York during this period. For detailed information by years and states see tables on page 105.

Town cooperation has been obtained chiefly in New Hampshire, Connecticut and Maine. However, some town funds have also been secured in Vermont and Massachusetts. In New Hampshire 705 towns have appropriated \$234,000 for control work. This amount represents 80.1 percent of the total town money secured in New England since 1918. Many of the New Hampshire towns have consistently made yearly appropriations until their entire pine areas were cleared of Ribes. In fact initial control work has been completed in 61 towns, 91 additional towns have appropriated for two years or more, and 35 towns for one year. During 1929, 7 of the 34 pine towns which had never cooperated, appropriated for the first time. From 1926 to 1928 inclusive, \$15684.95 has been expended from 56 appropriations on re-eradication work. The town money in New Hampshire is turned over to the state and expended with an additional 20 percent state funds to clear definite town blocks of Ribes, irrespective of property lines. A few towns in Maine and Connecticut have also been worked on the basis of town blocks. The total work on this basis since 1922 resulted in 1,633,784 acres being cleared of 18,568,231 wild Ribes and 62,129 cultivated bushes at a total cost of \$292,383.35 or 17.9 cents per acre. 96.6 percent of this acreage was in New Hampshire and 3.0 percent in Connecticut.

In Maine, town cooperation has been obtained since 1922; 291 town appropriations making available \$50,283.25 for control work. This

town money, except for a few hundred dollars, has been used to employ town foremen who aid the individual owners in eradicating Ribes concentrations on their properties. The nine town appropriations totaling \$605.90, in Vermont have been used to pay the excess labor cost of foremen, working with individual owners. Town money was secured in Massachusetts only during 1920 and 1921, when four appropriations, totaling \$1700, were made for control work in Berkshire county.

State work in eradicating Ribes - New England and New York.

Ribes eradication work, paid entirely from state funds, may be divided into two classes; namely, public lands and individuals' lands. Control work on state forests has been conducted in all states except Maine, which does not own such land. Since 1922, a total of 90,375 acres of state forests (or 1.5 percent of the entire acreage cleared of Ribes in New England and New York) have been eradicated of 3,967,712 wild Ribes and 8631 cultivated bushes at a total cost of \$133,353.78, or \$1.47 per acre. Of this total amount, New York has expended \$109,827.92 on 40,951 acres at a per acre cost of \$2.68 for eradicating 58.8 Ribes per acre. Also, most of the control work performed in New York prior to 1922 was on state lands. In the other states, very little state land work was done before 1922. Massachusetts ranks second in amount of control work on state forests since 1921 having eradicated 1,293,652 wild Ribes and 4314 cultivated bushes from 36,182 acres at a cost of \$19,050.46. Detailed summaries of state land projects are given on page 108 of this report. Initial control work has been completed on all pine lands in the state forests of New England, except a few small units in Massachusetts. New York has also completed about 80 percent of the initial Ribes eradication work needed in its state forests.

State control work on individually owned lands has been restricted to four states, Maine, Massachusetts, Rhode Island and Connecticut. Since 1921 these states have cleared 2,536,120 acres, of 1,443,741 wild Ribes and 62,802 cultivated bushes, at a total cost of \$101,134.95. This acreage represents 43.7 percent of the total area worked in New England and New York since that time. This work also represents an expenditure of four cents per acre for eradicating .57 Ribes per acre. In other words, such control work has been conducted on lands where the Ribes were so few and localized it was more efficient to do the control work by state scouts than to attempt to secure the cooperation of the individual owners. Most of this kind of work has been performed in Maine and Massachusetts. The percentage of the total acreage cleared of Ribes in each state that was worked on this basis is as follows: Maine - 67.7%; Massachusetts - 22.4%; Rhode Island - 7.1%; and Connecticut - 2.8%. In addition to the above, the state of Maine was compelled to enforce its state law in applying control measures on seventy acres of individually owned lands when the owners refused to cooperate. Detailed summaries of all state control work on individually owned lands are given on page 107.

Total results of Ribes eradication work in New England and New York.

The initial control work has not been completed in any of the Northeastern States. In Rhode Island, it will be finished during 1929, as only 250 acres of initial work remains to be done; but in Connecticut, Massachusetts, and Vermont such work will not be completed until 1930, and in the other states not before 1932. The total results of the Ribes eradication work (initial and re-eradication) since 1918 are as follows:

Program	Period	Acreage	Ribes Pulled		Total Cost	Per Acre	
			Wild	Cult.		Cost	Ribes
Experimental work	1918-1921	1,036,903	14,399,785	91,718	\$389,442.75	\$.376	13.9
Application of control	1922-1928	5,800,482	53,131,205	362,883	1025,061.67	.177	9.2
Totals	1918-1928	6,837,385	67,530,990	454,601	\$1414,504.42	\$.207	9.9

During the experimental control work the per acre costs were reduced from 72 cents in 1918 to 18 cents during 1921. Over 50 percent of the total acreage worked during this period is located in New Hampshire. In the general application of control measures since 1921, 86.4 percent of the total acreage cleared of Ribes is situated in the three states of Maine, New Hampshire and Massachusetts. The per acre cost of control work during this latter period ranges from 7 cents in Maine to \$1.02 in New York; the average number of Ribes per acre also vary in these two states, being 6.4 and 28.4 respectively.

The total acreage eradicated of Ribes since 1923 includes 350,407 acres reworked since that time. Of the total area^{re-}worked, 68.0 percent is in New Hampshire and 17.0 percent in Massachusetts. Over 61 percent of the total re-eradication work was performed during 1927 and 1928. Detailed cost and Ribes figures are only available for the period 1926 to 1928 inclusive. A summary of the re-eradication work during 1928 is given on pages 38 to 41.

The status of the initial control work in New England and New York is illustrated on the following map.

Insert map showing percent
of control area protected.

Protection of White Pine Plantations.

Adequate measures are being taken to protect the white pine plantings, in conjunction with the protection of natural pine, in all the agent districts of New England and New York. In three states (New York, Vermont and Rhode Island) the agents are supplied with an annual list showing the distribution of white pine stock from state nurseries. This procedure should be followed in the other states, as such lists are useful in securing cooperation. In Connecticut and New York there is an abundance of planted pine outside the agents' districts. Some white pines have also been planted outside the agent districts in Vermont, but few of these plantations have been inspected. In Connecticut where over 10,000 acres have been planted to white pine, these outside plantings are more or less naturally protected, due to the scarcity of wild Ribes. However, no systematic inspection of these plantations has been made. Such work is needed, especially to eliminate Ribes nigrum. In New York, where 49,945,938 white pines have been distributed from the state nurseries up to 1928 inclusive, systematic inspection of plantations, outside the agents' districts, has been limited to the work of one agent in five counties during 1928.

New York requires all prospective planters to sign an agreement, guaranteeing to eradicate all Ribes from the pine planting sites. Maine

sends the planters special cards emphasising the need for control, and attaches warning cards to each pine shipment sent from the state nursery. Also in New Hampshire, Rhode Island and Vermont a special letter, regarding the importance of control, is sent to each planter. It is essential that each state take definite action to make sure white pines are planted only on protected sites.

Black Currant Eradication

All cooperating states have taken (or are contemplating) action to eliminate the European black currants. New York, Massachusetts and Rhode Island have laws, which compel the eradication of such bushes. Michigan has a similar law, applying to certain counties, where infection has been found. Connecticut is also attempting, at this session of the legislature to secure a law prohibiting the possession of *Ribes nigrum* in the state. Five Northeastern states started systematic surveys during 1928 to locate and eradicate these bushes. In New York, this work was chiefly confined to control areas and to nursery growing sections and resulted in 7939 black currants being destroyed, not including bushes eradicated in connection with the regular eradication work. In Westchester county alone 3313 *Ribes nigrum* were uprooted, and the survey completed in all but six towns.

In Rhode Island, a survey to locate black currants was completed in two towns during the fall of 1927. These bushes were eradicated in 1928; also, all cultivated *Ribes* were destroyed in the control area at North Smithfield. Massachusetts also completed a systematic black currant survey in 12 towns during 1928, destroying 1371 bushes. In addition, 2199 *Ribes nigrum* were eradicated in other Massachusetts towns, in connection with the regular field work. No systematic survey to eradicate *Ribes nigrum* has been made in Connecticut; but during 1928, such bushes were destroyed within a one mile radius of each cooperating nursery which maintains an official blister rust control area. Vermont started a systematic black currant survey in the agents districts during the fall of 1928, completing such work in 13 towns and partially finishing 8 additional towns. A total of 210 *Ribes nigrum* were located on the properties of 24 persons. Most of this work was performed in Windham county, where a total of 178 bushes were destroyed. In the agents districts of New Hampshire and Maine, all cultivated *Ribes* including black currants, are eradicated in connection with the town control projects. It will, however, be necessary to make special arrangements for eliminating *Ribes nigrum* outside the agents districts. In Michigan an experimental survey for *Ribes nigrum* was made in the town of Sheridan. A total of 850 cultivated *Ribes* were located, 90, or 16% being *Ribes nigrum*. It took one man five days to make the survey. He traveled 168 miles and interviewed 210 persons at a total cost of \$56.76. The black currant eradication work will be continued in all states until this species is eliminated, at least from the white pine regions.

Nursery Sanitation

White pines must be grown under absolutely sanitary conditions, as regards Ribes, in order to prevent infection from blister rust. Initial control work, and some re-eradication of Ribes, has been completed around all pine growing nurseries in Maine, New Hampshire, Vermont and Rhode Island. However, most of such nurseries are located in Connecticut, Massachusetts and New York. No state nurseries are maintained in Connecticut and Rhode Island. During the fall of 1927, 158 owners of nurseries in Connecticut were interviewed regarding blister rust control. Sixteen of the owners, desiring to ship pine out of New England, agreed to cooperate in maintaining official control areas around their nurseries. A preliminary Ribes survey of these areas showed 70 Ribes owners, possessing 1014 cultivated bushes, would permit the destruction of the plants without compensation, and that 27 owners, having 567 bushes, were unwilling to cooperate. The attitudes of 28 additional owners of 342 bushes were not determined. As a result of the survey, control areas were established around eleven nurseries, and during 1928, 3962 acres were cleared of 60 wild Ribes, 93 Ribes nigrum and 333 other cultivated bushes. The eradication work around the nurseries will be completed during the spring of 1929.

In Massachusetts, all nurseries growing white pine for public sale were cleared of Ribes prior to 1925, and in each case a protection zone of 900 feet was also eradicated of such bushes. Infected pines had been found in three nurseries and the diseased trees destroyed. During 1925 and 1926, a special survey was conducted to eradicate all Ribes nigrum from within one mile of each state nursery and the more important pine growing commercial nurseries. In this work, a total of 217 Ribes nigrum and 319 flowering currants were destroyed. These bushes were owned by 155 persons, but claims were made by only ten persons for loss of 106 bushes. In 1927, the nursery sanitation work in Massachusetts was placed on a definite basis (of 1500 foot zones for wild Ribes and cultivated bushes other than nigrum) to agree with the federal requirements for shipment of pines outside of New England. During 1927 and 1928, control work was conducted around nine of the main commercial nurseries, and 4942 wild Ribes and 3345 cultivated bushes were destroyed. Fifty persons claimed \$647.15 for loss of 1400 cultivated Ribes. Spot pine infections were found in six Massachusetts nurseries during 1928, but no new outbreaks were located.

During the past several years, the state nurseries in New York have been consistently protected from blister rust by Ribes eradication. However, systematic sanitation work to protect the 300 commercial nurseries was not undertaken until 1928. Most of this work was performed in Wayne and Westchester counties. It soon became evident that cultivated Ribes were extremely abundant in the vicinity of the various nurseries. As compensation had to be paid for such bushes destroyed, it was apparent this work would have to be limited. Therefore, it was restricted to a

general survey to determine and record Ribes conditions in the vicinity of the nurseries in these counties, and to the eradication of Ribes nigrum in such situations. The survey produced valuable information, which will be of use in planning future sanitation work. It is essential that adequate sanitation measures be applied in all states to guarantee the production of healthy pines.

To February 24, 1928, the Bureau of Plant Quarantine and Control Administration had granted permits to a total of 115 nurseries in the infected states to allow interstate shipment of cultivated Ribes (red, white and Mountain currants and gooseberries) under certain restrictions. These 115 nurseries are distributed as follows: 62 in the Middle Atlantic States (59 being in New York), 39 in the Lake States, 6 in Connecticut and 8 in Washington and Oregon. As yet none of these states have been granted permission to ship white pines interstate to non-infected states.

Blister Rust Studies

Although there has been no special funds or personnel available to conduct surveys and field investigations in blister rust control, control, considerable work of this type has been performed at odd times by members of the control organization. A brief summary of this work follows:

Surveys

A cultivated Ribes census was made in Massachusetts during 1917 - data compiled and a summary report prepared - used as a basis for later inspections and in eradication of Ribes nigrum. Detailed white pine surveys made in Vermont, Rhode Island, Connecticut, and parts of Maine and New York - field data summarized and pine areas plotted on maps - information used by agents in planning their work - detailed reports have been submitted on the completed surveys, and the information used for educational and supervisory purposes. Surveys on production, value and use of white pine and other woods completed in Vermont - production survey finished in Rhode Island - these data have been summarized and reports published - information used for educational purposes. A survey of forest resources in New Hampshire was completed by the State Forestry Department in 1924, and the data published in bulletin form. Strip line infection surveys were made during 1920 in New Hampshire, Maine, Vermont, New York and Massachusetts - the pines on rod wide strips, totaling 165.9 miles in length, were examined - a total of 42, 274 pines were inspected and 10.2 percent were found infected - 256 plots, totaling 71.8 acres, were laid out adjacent to the strips; 27.7% of the 23,461 pines on these plots were diseased - the information has been used for educational purposes in various published statements. Cartographical survey made in all states during 1926 and 1927 to determine, by towns, forest conditions, especially white pine, Ribes, and infection - data summarized and maps prepared at the Boston Office, as a basis for the epidemiology study. During 1928, the New Hampshire agents conducted a survey in 69 backwood towns

—

to locate and map the minimum control area, which should be cleared of Ribes to protect the pine crop. Partly as a result of this survey, over 30 percent of these towns appropriated for control work in 1929.

Investigations

Demonstration areas of blister rust control established in all states - reports submitted on various studies - data used as a basis for determining costs of Ribes eradication, and for obtaining comparative figures. Effectiveness of control studies made in all states, except Vermont - reports submitted on these studies, but only Kittery Point study has been published. Blister rust damage plots laid out in all states, except Rhode Island - plots used for demonstration purposes and data summarized for educational use of agents. Detailed studies made in all states of spread and development of infection from definite sources, except in Rhode Island and Connecticut - reports submitted on each study, only Kittery Point study has been published. Cutting out of cankers experiment made in Massachusetts - part of the results published in bulletin form by Martin, Posey, and Gravatt. Sample forest type maps made of two towns, (Dover and Kensington) in New Hampshire and one in Massachusetts, (Duxbury) - detailed maps and estimates prepared - established effective method of mapping and estimating; town data used by agents for educational purposes and as a basis for control work. Selective eradication and Ribes ecology studies made by Fivaz in New York - preliminary reports submitted. Skunk currant study by Clave and Perry in Massachusetts - preliminary report given at annual conference showed only restricted spread of disease from such bushes. Crew method study by Riley in Connecticut - preliminary report presents no definite conclusions. Study begun by Clave to determine effectiveness of sodium chlorate in killing skunk currants - preliminary report given at annual conference. Special study conducted by New York agents to ascertain effectiveness of control - preliminary summary prepared by Boston Office shows pines examined for infection in 30 plots, 15 of the plots being in areas cleared of Ribes and 15 in unworked tracts - since the time of Ribes eradication, 15 times as much pine infection has originated in the unprotected tracts as in the protected areas.

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A summary of blister rust control activities in each cooperating state for the period 1918 to 1928 inclusive, is given on pages 73 to 101.

COOPERATIVE BLISTER RUST CONTROL WORK IN NEW ENGLAND
AND NEW YORK DURING 1928.

Commendable results were accomplished in blister rust control during 1928, even though the work was seriously handicapped by excessive rains. In spite of adverse weather, there was a decrease of only 1.6 percent in the total area cleared of Ribes during 1928. In fact, four states worked larger acreages than in 1927. However, less Ribes were eradicated during 1928, apparently because of the increased acreage of re-eradication work. Praiseworthy increases also occurred in individual and town cooperation. The control activities in all states were based on definite plans and budgets cooperatively prepared in advance by the state leaders, state cooperators, and federal supervisor. In order to produce more productive results, several changes were made in assignments and personnel. The spring, fall, and winter activities were especially strengthened by the assignment of special projects.

The principle changes in the organization during 1928 are as follows: In New Hampshire, Herr resigned October 1, to accept a position with the State Extension Service. No new agent was employed in his place, as the New Hampshire work was reorganized on the basis of seven agent districts instead of eight. During the fall and early winter months, the New Hampshire agents conducted special surveys in each of the 69 backward towns (which had given little or no cooperation) to locate and map the minimum area, which should be cleared of Ribes to protect the pine crop. This work produced definite facts as to local conditions and these facts proved of great assistance in securing cooperation. That over 30 percent of these backward towns appropriated for control work during 1929 can be attributed largely to this survey work.

In Vermont, it was necessary for Holden to resign December 31st, due to lack of sufficient state money to match federal expenditures. Future control work will be conducted by two agents rather than three. During the winter months, the agents cooperated with the state extension forester in laying out several permanent demonstration plots in white pine stands. Assistant forester, Merrill completed a report showing the production, use, and value of white pine and other woods in the state. The data for this report were secured principally by the blister rust control agents. During January-April 1929, the agents have assisted in laying out plots to determine the effectiveness of control and during March and April have been assigned to quarantine inspection.

Assistant state leader, Kennedy, of New York resigned December 31st, to accept a position as assistant extension forester at the New York State College of Forestry. In the future, an assistant state leader will not be employed in New York. During the eradication season of 1928, the unfinished control work in Saratoga and Washington Counties (formerly agent districts) was effectively conducted by temporary state men. Baker and Strait spent most of their time on black currant eradication, nursery sanitation and plantation inspection, Strait working in Westchester county and Baker in five counties in northwestern part of the state. During the fall months, the New York agents

made pine infection studies in 30 acre plots to determine the effectiveness of control work. The results from these studies were so valuable that all the states of New England have been making similar studies during the spring of 1929.

In Connecticut, the re-organization of the control work, on the basis of employing three temporary scouts during the eradication season in place of a permanent agent in Windham county, proved very effective. As a direct result, 51,183 acres were cleared of Ribes in this district in 1928 compared with 5460 acres during 1927. Also, the control work was better organized and more effectively conducted. Riley and Brigham interviewed all the nursery owners in Connecticut and made a Ribes survey surrounding the sixteen nurseries that desired to establish legal control areas.

The 1928 Massachusetts work was especially strengthened by the assignment of special projects. During the spring and fall months, Wheeler and McNearney were used on quarantine inspection. Clave conducted a special study to determine the effectiveness of sodium chlorate in killing skunk currants. He and Doore also spent the fall and winter months assisting respectively at the federal and state offices in Boston. Endersbee also gave some time during the winter months to preparing a preliminary report on the Ribes eradication study at Wolfeboro. During the fall, Brockway and Roop completed a black currant survey and eradication of such bushes, in 12 towns in the eastern part of the state. To further reduce expenses during the winter of 1928-1929, Roop was furloughed, without pay, for 2½ months.

In Rhode Island, considerable progress was made in placing forestry and blister rust control on a sound basis. Hurford assisted greatly in this work and contributed many special forestry and blister rust articles for publication. A survey of forest resources, especially as regards white pine, was also begun by Hurford during 1928.

A comparative summary of the total results of control activities in 1927 and 1928 is given in the following table:

General Total Summary Of Cooperative Blister Rust Control Activities
In New England And New York During 1928.

<u>Education</u>		% Increase or Decrease 1928 Over 1927.
	1928	
Meetings addressed.....	363	-22.3%
Attendance.....	21,178	-39.0%
Field demonstration meetings.....	159	+7.4%
Attendance.....	2,809	+6.2%
Displays placed.....	492	-24.0%
Mimeographed articles distributed.....	14,953	No record 1927
Publications distributed.....	62,708	-29.4%
News items published.....	1,109	-9.0%
Posters and signs placed.....	7,268	+3.2%

<u>Service</u>		% Increase or Decrease 1928 Over 1927.
	1928	
Initial interviews.....	15,644	+19.2%
Follow-up calls.....	3,625	+4.8%
Individuals instructed in disease and damage.....	5,673	-27.0%
Individuals instructed in control methods.....	3,279	-38.6%
<u>Individual Cooperation</u>		
Number individuals (Wild & cult. Ribes eradication..)	3,390	-4.2%
cooperating in (Cult. Ribes eradication only.....)	991	+10.8%
(General support only.....)	6,497	-18.8%
Amount expended by individuals on control work..	\$54,667.68	+11.5%
Number of states in which individuals cooperated.....	6	Same
<u>Town Cooperation</u>		
Number cooperating towns.....	145	+16.0%
Number states in which towns cooperated.....	4	Same
Amount of town money appropriated.....	\$41,126.60	+7.9%
Amount of town funds used.....	\$39,038.73	+1.9%
<u>State Cooperation</u>		
Number states cooperating.....	7	Same
Amount state (appropriation) funds used (all projects).....	\$125,671.02	+4.2%
<u>Ribes Eradication</u>		
Acreage cleared of Ribes.....	879,812	-1.6%
Acreage of re-eradication work.....	113,595	+12.3%
(Included in acreage examined)		
(Wild.....)	6,677,961	-16.9%
Ribes eradicated (Cultivated.....)	58,223	+19.5%
(Total.....)	6,736,184	-16.6%
Total cost (Ribes eradication).....	\$158,006.73	+3.1%
Cost per acre.....	.180	+5.2%
Ribes per acre.....	7.6	-14.6%
<u>Ribes Compensation</u>		
Number persons compensated.....	200	+39.9%
Total bushes paid for.....	3673	-19.2%
Total cost of compensation.....	\$1448.19	-16.4%

Personnel

(Cooperative Control Work) 1928

% Increase or
Decrease 1928
Over 1927.

State Leaders (5) Assistant Leaders (1).....	6	-14.3%
Blister Rust Control Agents (permanent).....	33	-8.3%
Blister Rust Control Agents (temporary).....	23	+21.0%
State Eradication Assistants.....	9	+12.5%
State Checkers.....	4	Same
Foremen.....	215	+20.1%
Scouts.....	41	+24.2%
State Laborers.....	412	+46.1%
Owners' Laborers.....	6994	+8.7%
Total Number Men Employed in Field Work.....	7737	+10.5%
(Regardless of length of time each worked)		

Classification Of Funds Used

State Appropriations.....	\$125,671.02	+4.2%
Nursery Funds.....	\$3,993.17	+24.2%
Town Appropriations.....	39,038.73	+1.9%
Individual Funds.....	54,667.68	+11.5%
All Other State Funds.....	627.19	-64.5%
Federal \$ For \$ Money.....	131,129.82	-1.0%
Total Expenditures.....	\$355,127.61	+2.8%

Results Accomplished To Date In The Cartographical Survey Work
Assigned To The Boston Office Of Blister Rust Control.

Relation of Distribution and Abundance of Native White Pine to Spread of Rust.

I. Field Records

- A. Field data secured for all towns in New England, New York, New Jersey, Pennsylvania, Wisconsin, Minnesota and Michigan, except Cheboygan County. (Data recorded on BR36 forms.)

II. Summarization of Records

A. Tabular Data

- (1) Data tabulated by acreage of forest types in each town, county, and state. (New England States, New York, Wisconsin, Minnesota, Michigan and Pennsylvania - In latter state, only pine data summarized. Copy of Vermont data sent to Ross.)
- (2) Data for New York white pine plantations compiled by towns and number of pines planted. (These records checked at Albany Office. Acreage of pine plantations added to forest area in each town. Total summary of New York pine plantations prepared and copies furnished Albany and Washington Offices.)
- (3) Special total summaries and charts of forest types, particularly white pine, made for New England and New York. (Copies sent to Messrs. Detwiler and Howard.)
- (4) Field sheets for Pennsylvania and New Jersey checked. Acreage of pine towns in Pennsylvania obtained by planimetering base maps.

B. Maps

- (1) Map of New England and New York showing, by towns, the percent of land area in forest growth, the two major forest types, and percent of forest area in pure pine (merchantable and reproduction) and mixed pine types.
- (2) Map of New England and New York showing acreage of pine in each town. (Acreages grouped into ten classes, depicted by colors.)

- (3) Same as (2), except acreages grouped into four classes instead of ten - (only Maine and New Hampshire completed.)
- (4) Map of New England and New York showing percent of land area of each town in pine. (Percents grouped into four classes and shown by colors.)
- (5) Zone map showing pine conditions in New England and New York, based on percent of land area in pine growth in each town - Reductions prepared and copy sent to Washington Office. This zone map later revised on larger scale to correspond to other zone maps.
- (6) Series of maps showing pine conditions in Michigan- 1928.
 - a.-Estimated acreage of pure natural white pine in each town.
 - b.-Estimated acreage of mixed natural white pine in each town.
 - c.-Estimated acreage of pure and mixed natural white pine in each town.
 - d.-Estimated acreage of white pine plantations in each town.One set prepared and sent to Washington Office.
- (7) Series of maps showing pine conditions in Pennsylvania - 1927.
 - a.-Estimated acreage of pure natural white pine in each town.
 - b.-Estimated acreage of mixed natural white pine in each town.
 - c.-Estimated acreage of pure and mixed white pine (natural and plantations) in each town.
 - d.-Estimated acreage of white pine plantations in each county.

Four sets prepared, and a set sent to each of the following: Wirt, McCubbin and Washington Office.
One set retained at Boston Office.

Relation of Distribution and Abundance of Wild Ribes to Spread of Rust.

I. Summarization of Records

A. Tabular Data

- (1) Ribes eradication by towns for period 1917 to 1928, inclusive - also, totals for states.
- (2) Ribes species by towns.

B. Maps

- (1) Map of New England and New York showing Ribes conditions and percent of pine area protected in each town (1917 to 1926, inclusive.)
- (2) Map of New England and New York showing Ribes species occurring in each town.
- (3) Series of seven maps of New England and New York, each map showing distribution of a certain species of wild Ribes. (These maps sent to Dr. Pennington.)
- (4) Map of New England and New York showing, by towns, the estimated number of wild Ribes per acre. (Number grouped into classes and depicted by colors.)
- (5) Zone map showing number of wild Ribes per acre in New England and New York, based on map (4). Reproductions obtained and copy sent to Washington Office.
- (6) Map of New England and New York showing the percentage of the control area in each town that has been cleared of Ribes - Map about 80 percent completed - Later a zone map will be prepared on a similar basis.

Relation of Distribution and Abundance of Pine Infection to Other Factors
Influencing The Spread of The Rust.

I. Summarization of Data

A. Maps

- (1) Map of New England and New York showing estimated percent of pine infection in each town. (Number grouped into classes and shown by colors.)
- (2) Zone map of New England and New York showing estimated percentage of pine infections, based on map (1) - Reproduction obtained and copies sent to Washington.

DETAILED SUMMARY AND ANALYSIS, BY STATES, OF
COOPERATIVE CONTROL ACTIVITIES IN NEW ENGLAND AND
NEW YORK DURING 1928.

DETAILED SUMMARY AND ANALYSIS BY STATES OF COOPERATIVE CONTROL ACTIVITIES
IN NEW ENGLAND AND NEW YORK DURING 1928.

EDUCATIONAL ACTIVITIES OF PERMANENT AGENTS IN NEW ENGLAND AND NEW YORK - 1928.
BASED ON TOTALS AND AVERAGES FOR EACH STATE.

State	Meetings Addressed		Field Dem. Meetings		Displays Placed		Mimeographed Articles Dist.		Publications Distributed		Items Published		Posters and Signs Placed	
	Total	Ave. Per Agt.	Total	Ave. Per Agt.	Total	Ave. Per Agt.	Total	Ave. Per Agt.	Total	Ave. Per Agt.	Total	Ave. Per Agt.	Total	Ave. Per Agt.
Maine	21	5.2	7	1.7	33	8.2	547	136.7	4157	1039.2	40	10.0	767	191.7
N. H.	171	22.1	51	6.6	144	18.6	11993	1547.5	15870	2047.7	415	53.5	2036	262.7
Vt.	65	21.6	55	18.2	78	26.0	150	50.0	4765	1588.3	53	17.6	1150	383.3
Mass.	36	6.3	16	2.8	127	22.3	1052	184.5	18133	3181.2	317	55.7	470	82.4
R. I.	10	10.0	4	4.0	7	7.0	150	150.0	4380	4380.0	39	39.0	415	415.0
Conn.	3	3.0	3	3.0	21	21.0	25	25.0	321	321.0	92	92.0	56	56.0
N.Y.*	56	6.7	7	0.8	36	3.1	1036	-	12979	1393.2	152	15.8	659	89.2
Totals	362	11.9	143	4.8	446	14.6	14953	472.5	60,605	1948.3	1108	36.2	5553	187.4

*The New York total figures are based on the work of all permanent agents, but the averages exclude the work of two men who were employed most of the time on special projects; such as, nursery sanitation, black currant eradication and plantation inspection. No mimeographed articles were distributed by the New York agents engaged in regular work.

In addition to the above educational accomplishments by the permanent blister rust control agents, the educational work of 19 temporary men employed in Maine during the eradication season produced the following results: One indoor meeting attended by 110 individuals, 16 field demonstration meetings with an attendance of 110 persons, 46 displays, 2103 publications distributed, one news item published, and 1715 posters and signs placed. Although the educational activities of these temporary agents represented only a small proportion of the total amount of such work; yet in Maine, these men held 4.5% of the indoor meetings, 69.6% of the field demonstration meetings, placed 58.2% of the displays, distributed 33.9% of the publications, published 2.4% of the news items, and put up 69.1% of the posters and signs.

In Massachusetts, Agent Brockway published 275, or 86.7%, of the total number of news items in that state.

SERVICE ACTIVITIES OF PERMANENT AGENTS IN NEW ENGLAND AND NEW YORK - 1928.
BASED ON TOTALS AND AVERAGES FOR EACH STATE.

State	No. Initial Interviews		No. Follow-up Calls		No. Individuals Instructed in			
	Total	Ave. Per Agent	Total	Ave. Per Agent	Control Methods		Disease	
Maine	673	168.2	558	139.5	119	29.7	349	87.2
N.H.	2134	275.3	2326	300.1	391	50.4	1338	172.6
Vt.	1055	351.6	1204	401.3	499	166.3	767	255.6
Mass.	3652	640.7	1206	211.6	623	109.3	533	93.5
R.I.	140	140.0	111	111.0	2	2.0	9	9.0
Conn.	125	125.0	375	375.0	50	50.0	126	126.0
N.Y.*	6291	180.1	2454	318.1	939	121.2	1691	151.0
Totals	14,070	306.9	8234	271.8	2623	86.0	4813	141.9

*The New York total figures are based on the work of all permanent agents, but the averages exclude the work of two men who were employed most of the time on special projects, such as nursery sanitation, black currant eradication, and plantation inspection.

In addition to the above service items, the 19 temporary agents in Maine made 1574 initial interviews and 391 follow-up calls, instructed 860 individuals in the disease and damage, and demonstrated control methods to 656 persons. This service work in Maine by the temporary agents represents 70.0% of the initial interviews in that state, 41.3% of the follow-up calls, 71.1% of the number persons receiving field demonstrations in disease and damage, and 84.7% of those given demonstrations of control methods.

COOPERATIVE RIBES ERADICATION IN NEW ENGLAND AND NEW YORK DURING 1928.

(Based on totals and per acre values for each state,
including both initial and re-eradication work)

State	No. Acres Examined	Ribes Pulled		Total Cost	Per Acre Values	
		Wild	Cult.		Cost	Ribes
Maine	203,067	1,595,792	8,778	\$22,597.90	\$.111	7.9
N.H.	228,530	2,302,538	5,220	40,844.96	.179	10.1
Vt.	16,767	159,340	196	6,886.37	.411	9.5
Mass.	239,033	521,360	31,815	26,428.59	.111	2.2
R.I.	21,461	17,777	615	2,629.64	.119	0.83
Conn.	75,105	123,385	1,364	8,013.84	.107	1.6
N.Y.	95,849	1,957,769	10,235	50,605.43	.528	20.4
Totals	879,812	6,677,961	58,223	\$158,006.73	\$.180	7.6

Comparison, By States, Of Acreage Eradicated Of Ribes And Per Acre Costs In
New England And New York During 1927 And 1928. (Initial and Re-eradication Work)

State	Acreage Eradicated		Percent + or - in acres eradicated over 1927	Cost Per Acre		Increase or Decrease in Per Acre Cost 1928 Over 1927	Increase or Decrease in Ribes Per Acre 1928 Over 1927.
	1928	1927		1928	1927		
Maine	203,067	261,481	-22.3%	\$.111	\$.086	+\$.025	-2.0
N.H.	228,530	225,793	+1.2%	.179	.182	-.003	-1.7
Vt.	16,767	19,405	-13.6%	.411	.424	-.013	-4.9
Mass.	239,033	294,228	-18.8%	.111	.087	+.024	-0.87
R.I.	21,461	9,735	+120.3%	.119	.175	-.056	-1.47
Conn.	75,105	20,904	+259.3%	.107	.413	-.306	-5.7
N.Y.	95,849	62,955	+52.3%	.528	.723	-.195	-2.0
Totals	879,812	894,501	-1.6%	\$.180	\$.171	+\$.009	-1.3

Although four of the seven Northeastern States covered a greater acreage in 1928 than during the preceding year, yet the 1928 total for all states was 14,689 acres, or 1.6% less than in 1927. This is primarily due to large decreases in Maine and Massachusetts. Three states (Connecticut, Rhode Island, and

New York) made commendable increases in 1928. The large increase in Connecticut (259.3%) was the result of scout work performed by four temporary agents who were employed in place of a permanent agent in the Northeastern part of the state. In Rhode Island, the increase in acreage protected can be attributed to the suspension of the 1927 control work on July 30th, due to lack of state funds. The increase of 32,894 acres in New York is especially noteworthy.

DETAILED SUMMARY AND ANALYSIS BY STATES OF THE PROJECT "RIBES ERADICATION"
IN NEW ENGLAND AND NEW YORK DURING 1928.

This information will be summarized and discussed according to the three following classes of Ribes eradication: (I) initial and re-eradication work (pages 26 to 32.) (II) initial work (pages 33 to 37) and (III) re-eradication work, (pages 38 to 41.) Each of these three eradication classes is further subdivided into the four kinds of control work; namely, (A) individual cooperation (B) town cooperation (C) state work on individuals lands and (D) state work on public lands.

I.- INITIAL AND RE-ERADICATION WORK.

A.- Individual Cooperation In Ribes Eradication In New England
And New York During 1928.

State	No. Cooperators		% of Total No. Cooperators (Wild Ribes Eradication) in Northeastern States Obtained in Each State.	Total Cost to Individuals	% of Total Cost to Individuals in Northeastern States Shared by Co-operators in Each State
	Wild & Cult. Ribes Erad.	Cult. Ribes Erad. Only			
Maine	1050	40	31.0	\$9,567.09	17.5
N.H.	37	-	1.1	4,534.14	8.3
Vt.	222	-	6.5	5,829.97	10.7
Mass.	1081	951	31.9	9,443.65	17.3
Conn.	34	-	1.0	1,950.64	3.5
N.Y.	966	-	28.5	23,342.19	42.7
Totals	3380	991	100.0	\$54,667.68	100.0

All states in this group except Rhode Island solicited and obtained individual cooperation on control work. The Ribes are so few and localized in Rhode Island that only scout work is necessary and this can be performed most effectively by the state.

Results Of Individual Cooperation In Ribes Eradication Work,
With And Without Direct State Supervision, In The Northeastern
States During 1928.

(Initial And Re-Eradication Work)

State		Maine	N.H.	Vt.	Mass.	Conn.	N.Y.	Totals
Coop. Erad.	Cult. Ribes Only	40	-	-	951	-	-	991
	Wild and Cult. Ribes	1050	37	222	1081	34	966	3390
Acreage examined		30,962	15,667	16,367	158,697	15,577	85,948	323,218
WILD Ribes pulled		1,523,641	323,638	158,718	461,449	65,860	1,494,615	4,027,921
CULT. Ribes pulled		7,794	53	196	20,717	1,152	7,192	37,104
Cost	State	-	\$1220.82	\$799.77	\$8251.76	\$1100.57	18,807.73	30,180.65
	Federal	-	-	-	-	300.88	15.00	315.88
	Towns	\$7980.27	-	109.60	-	-	-	8,089.87
	Individuals	9567.09	4534.14	5829.97	9443.65	1950.64	23,342.19	54,667.68
	TOTAL	17,547.36	\$5754.96	\$6739.34	17,695.41	\$3352.09	42,164.92	93,254.08
Cost per acre		\$.567	\$.367	\$.412	\$.112	\$.215	\$.491	\$.289
Ribes per acre		49.2	20.7	9.7	2.9	4.2	17.4	12.5

1. The federal expenditure in Connecticut was for time spent by the temporary agents on control work performed in cooperation with individuals. The small federal expenditure in New York represents the cost of agent Baker's time on similar work.

2. The Connecticut figures include 60 wild Ribes and 426 cultivated bushes eradicated from 3962 acres in connection with the nursery sanitation project; the state paying \$39.30 and the cooperating nurserymen \$173.00 of the costs. As this is really "individual cooperation", it was included in the eradication summaries.

3. Of the total number of individual cooperators who eradicated wild Ribes in the Northeastern States, during 1928, 91.4% were in the three states of Maine, Massachusetts, and New York. Of the total acreage worked in cooperation with individuals, 49.1% was in Massachusetts, and 26.5% in New York. However, private owners in New York expended 42.7% of total amount spent by individual cooperators.

4. The acreage worked in cooperation with individuals represents 36.7% of the total area cleared of Ribes in New England and New York during 1928.

5. The total cost of this work was shared on the following basis: Individuals - 58.6%, States - 32.4%, Towns - 8.7%, and Government - 0.3%. The percent of the total cost of such work in each state paid by individual cooperators in the respective states is as follows: Maine - 54.5%, New Hampshire - 78.8%, Vermont - 86.5%, Massachusetts - 52.8%, Connecticut - 58.2%, and New York - 55.3%.

6. The percent of increase or decrease in amount of all individual cooperation during 1928 over 1927 is as follows:

Number cooperators eradicating cultivated Ribes only.....	+10.8%
Number cooperators eradicating wild and cultivated Ribes.....	+4.2%
Number acres eradicated.....	+10.8%
Number wild Ribes pulled.....	-19.3%
Number cultivated Ribes pulled.....	+8.9%
(States.....	+5.9%
(
(Federal.....	None in 1927
(
Cost (Towns.....	-3.4%
(
(Individuals.....	+11.5%
(
(Total.....	+8.6%
Cost per acre.....	-2.0%
Ribes per acre.....	-26.5%

B.- Town Cooperation In Ribes Eradication In New England
And New York During 1928.

(Initial And Re-Eradication Work)

State	No. Towns Approp.	% Total Number in Each State	Amount Town Funds Appropriated	% Total Funds Approp. in Each State	Amount Town Funds Expended	% Total Funds Used in Each State
Maine	61	42.0	\$10,717.00	26.0	\$10,009.07	25.6
N.H.	80	55.2	28,700.00	69.8	27,390.19	70.1
Vt.	1	0.7	109.60	0.3	109.60	0.3
Conn.	3	2.1	1,600.00	3.9	1,529.87	4.0
Totals	145	100.0	\$41,126.60	100.0	\$39,038.73	100.0

The town money in Maine was used to pay the wages of town foremen who supervise the control work done by individuals. Town funds \$2028.80 were also used at Bar Harbor, Maine to clear 3563 acres of 59,963 wild and 895 cultivated Ribes. In New Hampshire and Connecticut, the town money is turned over to the state, and used to eradicate Ribes from definite blocks irrespective of property lines. The state of New Hampshire increased the amount of town money by twenty percent; and in Connecticut, \$1176.98 state money was used on town projects. The town funds in Vermont paid excess labor charges of foremen supervising the work of individuals.

Results Of Town Cooperation In Ribes Eradication During 1928
In New England And New York.

(Initial And Re-Eradication Work)

State		Maine	N.H.	Conn.	Totals
Acreage examined		3563	211,260	4163	218,986
Wild Ribes pulled		59,963	1,868,864	43,857	1,972,684
Cult. Ribes pulled		895	4933	185	6013
Cost	Towns	\$2028.80	\$27,390.19	\$1529.87	\$30,948.86
	State	-	6866.39	1176.98	8043.37
	Total	\$2028.80	\$34,256.58	\$2706.85	\$38,992.23
Cost per acre		.569	.162	.65	.178
Ribes per acre		16.8	8.8	10.5	9.1

The total acreage worked on the basis of town cooperation (218,986 acres) represents 24.9% of the total area cleared of Ribes in the Northeastern States during 1929. Of the total acreage worked in cooperation with towns, 96.5% was in New Hampshire.

The percent of increase or decrease in town work during 1928 over 1927 is as follows:

Acreage eradicated.....	-0.7%
Wild Ribes pulled.....	-19.4%
Cultivated Ribes pulled.....	+133.8%
(Towns.....)	+3.4%
Cost (States.....)	-41.9%
(Total.....)	-5.7%
Cost per acre.....	-4.8%
Ribes per acre.....	-18.0%

C.- Eradication Of Ribes By States On Individuals' Lands In
New England And New York During 1928.

(Initial And Re-Eradication Work)

State		Maine	Mass.	R.I.	Conn.	Totals
Acreage examined		168,527	78,113	20,680	51,182	318,502
Wild Ribes pulled		11,976	43,496	11,551	9,733	76,756
Cult. Ribes pulled		89	10,132	545	-	10,766
Cost	State	\$1789.35	\$8024.27	\$2505.64	-	\$12,319.26
	Gov't.	1223.39	-	-	1455.00	2678.39
	Total	\$3012.74	\$8024.27	\$2505.64	\$1455.00	\$14,997.65
Cost per acre		\$.018	\$.103	\$.121	\$.028	\$.048
Ribes per acre		.07	0.56	0.56	0.19	0.24

The total acreage of such non-cooperative state work on private lands (318,502 acres) represents 35.1% of the total area cleared of Ribes in the Northeastern States during 1928. All eradication work in Rhode Island was done on this basis, as the Ribes average less than one per acre and are very localized. In Maine, 82.9% of the total acreage examined in the state was worked in this manner, while in Connecticut and Massachusetts it amounted to 66.8% and 32.7%, respectively. This kind of work in Connecticut was performed by four temporary agents. These men were employed in place of one permanent agent, and judging from results, this new arrangement is more effective, as nearly nine times as much acreage was scouted in 1928 as during the previous year.

In Massachusetts and Rhode Island, all the costs of such control work was paid by the state, while in Maine, the Government paid 40.6% of the scouting costs. The Federal expenditure in Connecticut represents the cost of the four temporary agents employed during the eradication season.

The percent of increase or decrease in 1928 over similar non-cooperative Ribes eradication work on private lands in 1927 is as follows:

Acreage eradicated.....	-13.5%
Wild Ribes pulled.....	-39.2%
Cultivated Ribes pulled.....	+25.5%
(State.....)	+18.4%
Cost (
(Government.....)	-21.2%
Cost per acre.....	+29.7%
Ribes per acre.....	-29.4%

D.- Ribes Eradication Work On Public Lands In New England
And New York During 1928.

(Initial And Re-Eradication Work)

State		N.H.	Vt.	Mass.	R.I.	Conn.	N.Y.	Totals
Acreage examined		1603	400	2223	781	4183	9901	19,091
Wild Ribes pulled		110,036	622	16,415	6226	3935	463,154	600,388
Cult. Ribes pulled		234	-	966	70	27	3043	4340
Cost	State	\$833.42	\$147.03	\$708.91	\$124.00	\$182.65	\$8440.51	\$10,436.52
	Gov't.	-	-	-	-	317.25	-	317.25
	Total	\$833.42	\$147.03	\$708.91	\$124.00	\$499.90	\$8440.51	\$10,753.77
Cost per acre		\$.52	\$.368	\$.319	\$.159	\$.120	\$.852	\$.563
Ribes per acre		68.6	1.6	7.4	8.0	0.94	46.8	31.4

1. The total acreage (19,091 acres) eradicated on state lands represents 2.1% of the total area cleared of Ribes in the Northeastern States during 1928.

Received of the Treasurer of the County of ... the sum of ... Dollars for ...

on the ... day of ... 19... at ...

Witness my hand and seal of office this ... day of ... 19...
at ...

Notary Public for the State of ...

My commission expires on ...

...

...

2. The entire costs of this work was paid from state funds, except \$317.25 federal money used in Connecticut. This federal expenditure represents the time of the temporary agents on state land work in cooperation with the State Forestry Department.

3. The blister rust control agents supervised all state land work during 1928. In Massachusetts the work was done in cooperation with the Department of Conservation and the Mount Wachusett Reservation Commission; \$444.54 being expended by these two departments and \$264.37 from the regular state blister rust appropriation. The state land work in Rhode Island was performed at Goddard Memorial Park, which the state recently acquired. Ribes eradication on state forests was conducted in all the New York agent districts, except those of Strait and Baker. For the first time, all such work in this state was supervised by the blister rust control agents. It is gratifying to note the cost of control work on state lands in New York during 1928 was \$.85 per acre as compared with \$1.97 in 1927.

4. The percent of increase or decrease in 1928 over similar state land work in 1927 is as follows:

Acreage eradicated.....	+35.4%
Ribes destroyed.....	+29.4%
Total cost.....	-11.9%
Cost per acre.....	-34.9%
Ribes per acre.....	-4.6%

In addition to the control work of the four classes previously described, it was necessary in Maine to use regulatory authority in clearing 212 wild Ribes from 15 acres of private land at a cost of \$9.00. The state paid for this work, but will be reimbursed by the town which in turn will assess the property owner.

CONTROL WORK ON WHITE MOUNTAIN NATIONAL FOREST.

In a letter, written February 26, 1929, Forest Supervisor, James E. Scott, advises the Boston Office that no systematic control work was done on the White Mountain National Forest during 1928. As all pine areas worth protecting in the Forest had been eradicated of Ribes prior to 1928, only incidental scouting in conjunction with the regular duties of the field men was necessary.

II. INITIAL CONTROL WORK.

Summary of Total Initial Ribes Eradication Work in New England and New York During 1928.

State	Acreage Initially Examined	Ribes Pulled		Total Cost	Per Acre Values	
		Wild	Cult.		Cost	Ribes
Maine	202,359	1,577,254	8778	\$22,417.60	\$.111	7.8
N.H.	145,329	2,041,412	4076	31,572.35	.217	14.0
Vt.	14,475	147,930	144	6,020.30	.416	10.2
Mass.	223,158	495,923	31,808	25,178.78	.113	2.2
R.I.	21,461	17,777	615	2,629.64	.119	0.83
Conn.	73,981	98,412	1,289	6,727.34	.091	1.3
N.Y.	85,454	1,740,941	9,411	45,570.13	.533	20.4
Total	766,217	6,119,649	56,121	\$140,116.14	\$.183	8.0

The total acreage initially cleared of Ribes (766,217 acres) represents 87.1% of all eradication work conducted in the Northeastern States during 1928.

A.- Initial Ribes Eradication In Cooperation With Individuals
In New England And New York During 1928.

State		Maine	N.H.	Vt.	Mass.	Conn.	N.Y.	Totals
Coop. Erad.	Cult.Ribes Only	40	-	-	951	-	-	991
	Wild and Cult.Ribes	1,021	25	190	1,019	30	918	3,203
Acres examined initially		30,254	10,873	14,475	143,752	15,240	77,587	292,181
WILD Ribes Pulled		1,505,103	297,583	147,930	436,076	63,588	1,345,074	3,795,354
Cult.Ribes Pulled		7,794	12	144	20,710	1,077	6,745	36,482
Cost	State	-	\$975.16	\$697.82	\$7904.86	\$962.10	\$17,395.92	\$27,935.86
	Towns	\$7884.97	-	\$109.60	-	-	-	\$7994.57
	Individuals	\$9482.09	\$3551.43	\$5212.88	\$8602.15	\$1811.36	\$20,890.58	\$49,530.49
	Gov't.	-	-	-	-	\$300.88	\$15.00	\$315.83
	Total	\$17,367.06	\$4526.59	\$6020.30	\$16,507.01	\$3074.34	\$38,281.50	\$85,776.80
Cost per acre		\$.574	\$.416	\$.416	\$.115	\$.202	\$.493	\$.294
Ribes per acre		49.7	27.4	10.2	3.0	4.2	17.3	13.0

The initial eradication work conducted in cooperation with individuals (292,181 acres) represents 38.1% of all initial work performed in the Northeastern States during 1928. Of the total acreage worked in cooperation with individuals, 49.2% was in Massachusetts, and 26.4% in New York. However, individual owners in New York expended 44.6% of the total amount of individual funds used in all states.

B.- Town Cooperation In Initial Ribes Eradication In New
England And New York During 1928.

State	No. Towns Approp.	% Total No. in Each State	Amount Town Money Expended	% Total Funds Expended in Each State
Maine	61	49.2	\$9913.77	31.0
N.H.	60	48.4	20,954.79	65.5
Vt.	1	0.8	109.60	0.3
Conn.	2	1.6	1023.87	3.2
Totals	124	100.0	\$32,002.03	100.0

Six of the towns listed above (3 in Maine, 2 in New Hampshire, and 1 in Connecticut) also appropriated for re-eradication work.

The town money in Maine was used to pay the wages of town foremen who supervise the control work done by individuals, and for 3563 acres eradicated in Bar Harbor; the town paying all costs amounting to \$2028.80. In New Hampshire and Connecticut, the town funds are turned over to the state, and used to eradicate Ribes from definite blocks irrespective of property lines. The state of New Hampshire increased the amount of town money by twenty percent, and in Connecticut, \$674.23 state money was used on town projects. The town funds in Vermont paid excess labor charges of foremen supervising the work of individuals.

Results Of Town Cooperation In Initial Ribes Eradication
In New England And New York During 1928.

State		Maine	N.H.	Conn.	Totals
Acreage examined		3563	132,853	3376	139,792
Wild Ribes pulled		59,963	1,633,793	21,156	1,714,912
Cult. Ribes pulled		895	3830	185	4910
Cost	Towns	\$2028.80	\$20,954.79	\$1023.87	\$24,007.46
	State	-	5257.55	674.23	5931.78
	Total	\$2028.80	\$26,212.34	\$1698.10	\$29,939.24
Cost per acre		\$.569	\$.197	\$.503	\$.214
Ribes per acre		16.8	12.3	6.3	12.3

The total acreage initially cleared of Ribes (139,792 acres) in cooperation with towns represents 18.3% of the total initial work completed in the Northeastern States during 1928. Ninety-five percent of this acreage eradicated of Ribes in cooperation with towns is in New Hampshire.

C.- Initial Eradication Work By States On Individuals' Lands
In New England And New York During 1928.

State		Maine	Mass.	R.I.	Conn.	Totals
Acreage examined		168,527	77,183	20,680	51,182	317,572
Wild Ribes pulled		11,976	43,432	11,551	9733	76,692
Cult. Ribes pulled		89	10,132	545	-	10,766
Cost	State	\$1789.35	\$7962.86	\$2505.64	-	\$12,257.85
	Gov't.	1223.39	-	-	\$1455.00	2678.39
	Total	\$3012.74	\$7962.86	\$2505.64	\$1455.00	\$14,936.24
Cost per acre		\$.018	\$.103	\$.121	\$.028	\$.048
Ribes per acre		0.07	0.56	0.56	0.19	0.24

The acreage worked on this basis (317,572 acres) represents 41.4% of the total acreage initially cleared of Ribes in the Northeastern States during 1928.

D.- Initial Ribes Eradication Work On Public Lands In New
England And New York During 1928.

State		N.H.	Mass.	R.I.	Conn.	N.Y.	Totals
Acreage examined		1603	2223	781	4183	7867	16,657
Wild Ribes pulled		110,036	16,415	6226	3935	395,867	532,479
Cult. Ribes pulled		234	966	70	27	2666	3963
Cost	State	\$833.42	\$708.91	\$124.00	\$182.65	\$7288.63	\$9137.61
	Gov't.	-	-	-	317.25	-	317.25
	Total	\$833.42	\$708.91	\$124.00	\$499.90	\$7288.63	\$9454.86
Cost per acre		\$.52	\$.319	\$.159	\$.120	\$.93	\$.568
Ribes per acre		68.6	7.4	8.0	0.94	50.3	32.0

The initial eradication on public lands (16,657 acres) represents 2.2% of the total acreage initially cleared of Ribes in New England and New York during 1928.

III. RE-ERADICATION WORK.

Summary of Total Ribes Re-Eradication Work in New England and New York During 1928.

State	Acreage Re-Examined	Ribes Pulled		Total Cost	Per Acre	
		Wild	Cult.		Cost	Ribes
Maine	708	18,538	-	\$180.30	\$.255	26.2
N.H.	83,201	261,126	1144	9,272.61	.111	3.1
Vt.	2,292	11,410	52	866.07	.378	5.0
Mass.	15,875	25,437	7	1,249.81	.079	1.6
Conn.	1,124	24,973	75	1,286.50	1.14	22.2
N.Y.	10,395	216,828	824	5,035.30	.484	20.9
Totals	113,595	558,312	2102	\$17,890.59	\$.157	4.9

The total acreage re-worked (113,595 acres) represents 12.9% of all eradication work conducted in the Northeastern States during 1928. Of the total area re-examined, 73.2% was in New Hampshire, where 36.4% of the control work was re-eradication. The acreage re-eradicated of Ribes in Maine amounted to only 0.3% of all the work done in that state, while in Vermont, New York, Massachusetts, and Connecticut, the percentages were 13.7%, 10.8%, 6.6%, and 1.5%, respectively.

The four different classes of re-eradication work are summarized on pages to

The following table shows the results of the survey conducted in 2010. The data is presented in a table with 5 columns: Name, Age, Gender, Education, and Occupation.

Name	Age	Gender	Education	Occupation
John Doe	25	Male	High School	Student
Jane Smith	30	Female	College	Teacher
Bob Johnson	45	Male	High School	Farmer
Alice Brown	22	Female	College	Engineer
Charlie White	35	Male	High School	Worker
Diana Green	40	Female	College	Manager
Frank Black	50	Male	High School	Retired
Grace Lee	28	Female	College	Doctor
Henry King	32	Male	High School	Artist
Ivy Clark	38	Female	College	Lawyer

The data is presented in a table with 5 columns: Name, Age, Gender, Education, and Occupation.

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A.- Ribes Re-Eradication In Cooperation With Individuals
In New England And New York During 1928.

State		Maine	N.H.	Vt.	Mass.	Conn.	N.Y.	Totals
Coop. Erad.	Cult. Ribes Only	-	-	-	-	-	-	0
	Wild and Cult. Ribes	29	12	32	62	4	48	187
Acres re-examined		708	4794	1892	14,945	337	8361	31,037
Wild Ribes pulled		18,538	26,055	10,788	25,373	2272	149,541	232,567
Cult. Ribes pulled		-	41	52	7	75	447	622
Total Cost	State	-	\$245.66	\$101.95	\$346.90	\$138.47	\$1411.81	\$2244.79
	Towns	\$95.30	-	-	-	-	-	95.30
	Individuals	85.00	982.71	617.09	841.50	139.28	2471.61	5137.19
	Total	\$180.30	\$1228.37	\$719.04	\$1188.40	\$277.75	\$3883.42	\$7477.29
Cost per acre		\$.255	\$.256	\$.38	\$.08	\$.824	\$.464	\$.241
Ribes per acre		26.2	5.4	5.7	1.7	6.7	17.9	7.5

The re-eradication work conducted in cooperation with individuals (31,037 acres) represents 27.4% of the total area re-examined in New England and New York during 1928, and 9.6% of all the work (initial and re-eradication) done in cooperation with individuals. As in the preceding tables on individual cooperation, this summary includes both the work done with and without direct state supervision.

B.- Town Cooperation In Ribes Re-Eradication In New England
And New York During 1928.

State	No. Towns Approp.	% Total Number in Each State	Amount Town Money Expended	% Total Funds Ex- pended in Each State
Maine	3	11.1	\$95.30	1.3
N.H.	22	81.5	6435.40	91.5
Conn.	2	7.4	506.00	7.2
Totals	27	100.0	\$7036.70	100.0

The towns funds in Maine were used to pay the wages of town foremen who supervised the work performed by individuals, while in New Hampshire and Connecticut, the town money was turned over to the state, and used to eradicate Ribes from definite blocks regardless of property lines. In New Hampshire, \$1608.84 state money was added to the town funds, and \$502.75 additional state money was used in Connecticut on town re-eradication projects.

Results Of Town Cooperation In Re-Eradication Of Ribes
In New England And New York During 1928.

State		N.H.	Conn.	Totals
Acreage re-examined		78,407	787	79,194
WILD Ribes pulled		235,071	22,701	257,772
CULT. Ribes pulled		1103	-	1103
Cost	Towns	\$6435.40	\$506.00	\$6941.40
	State	1608.84	502.75	2111.59
	Total	\$8044.24	\$1008.75	\$9052.99
Cost per acre		\$.103	\$1.28	\$.114
Ribes per acre		3.0	28.8	3.3

The total acreage re-eradicated of Ribes in cooperation with towns represents 69.7% of all reworked area during 1928. Of the total acreage re-examined on the basis of town cooperation, over 97 percent is in New Hampshire.

C.- Re-Eradication Work By State On Individuals' Lands
In New England And New York During 1928.

In Massachusetts, 64 wild Ribes were pulled from 930 acres re-examined by state scouts at a total cost of \$61.41. This work represents 0.8% of the total area re-examined in New England and New York during 1928. No work of this kind was performed in the other states.

D.- Ribes Re-Eradication Work On Public Lands In New
England And New York During 1928.

State	Acreage Re-examined	Ribes Pulled		Total Cost	Per Acre Values	
		Wild	Cult.		Cost	Ribes
Vermont	400	622	-	\$147.03	\$.368	1.6
N.Y.	2037	67,287	377	\$1151.88	.566	33.1
Totals	2434	67,909	377	\$1298.91	\$.534	27.9

This re-eradication work on public lands (2434 acres) represents 2.1% of the total area re-examined in New England and New York during 1928.

STATE COMPENSATION FOR CULTIVATED RIBES DESTROYED IN
NEW ENGLAND AND NEW YORK DURING 1928.

State	Total No. Cult. Ribes Destroyed	No. Bushes For Which Compensation Was Paid	% Total Bushes Paid For	No. Persons Paid Compensa- tion	Amount Paid	Average Per Bush Compensa- tion
Maine	8,778	-	0	-	-	-
N.H.	5,220	6	0.1	1	\$1.34	\$0.223
Vt.	196	12	6.1	3	6.00	.50
Mass.	31,815	2746*	8.6	96*	\$1140.90*	.415
R.I.	615	-	0.0	-	-	0
Conn.	1,364	-	0.0	-	-	0
N.Y.	10,235	909	8.8	(Est.) 100	299.95	.33
Totals 1928	58,223	3673	6.3	200	\$1448.19	\$0.394
Totals 1927	48,738	4544	9.3	143	\$1731.96	\$0.381

*Claims received, but not settled.

The amount listed above for compensation in Massachusetts represents claims made by owners for bushes destroyed during 1928, but such claims will not be settled until the spring of 1929.

CLASSIFICATION OF COOPERATIVE BLISTER RUST CONTROL FUNDS USED ON PROJECT
"RIBES ERADICATION" IN NEW ENGLAND AND NEW YORK DURING 1928.

Expenditures	Maine	N.H.	Vt.	Mass.	R.I.	Conn.	N.Y.	Totals
Individuals	\$9567.09	\$4534.14	5829.97	\$9443.65	-	1950.64	23,342.19	\$54,667.68
Towns	10,009.07	27,390.19	109.60	-	-	1529.87	-	39,038.73
State Approp.	1798.35	8920.63	946.80	16,540.40	2629.64	2277.55	27,248.24	60,361.61
All Other State Funds	-	-	-	444.54	-	182.65	-	627.19
Federal Funds	1223.39	-	-	-	-	2073.13	15.00	3,311.52
TOTAL	\$22,597.90	40,844.96	6886.37	26,428.59	2629.64	3013.84	50,605.43	158,006.73

1. The funds spent on the Ribes eradication project were for laborers, scouts, and foremen. The cost of the state checkers in New Hampshire and the eradication assistants in New York are not included in this project.

2. The total cost of "Ribes Eradication" (\$158,006.73) represents 44.6% of all state and federal expenditures on all blister rust control projects in New England and New York during 1928, compared with 153,302.41 and a percentage figure of 44.4% in 1927.

3. Proportion paid by the various cooperators during 1927 and 1928 on the project - "Ribes Eradication" in New England and New York.

Source of Funds	Amount Expended 1928	Amount Expended 1927	% + or - 1928 over 1927	Percent of Total Amount Spent by Each Cooperating Class	
				1928	1927
Individuals	\$54,667.68	\$49,040.81	+11.5	34.6	32.0
Towns	39,038.73	38,299.74	+1.9	24.7	25.0
State Approp.	60,361.61	60,880.96	-0.7	38.2	39.7
Other State Funds	627.19	1,671.19	-62.5	0.4	1.1
Gov't. (Scouting)	3,311.52	3,409.71	-2.9	2.1	2.2
TOTAL	\$158,006.73	\$153,302.41	+3.1	100.0	100.0

4. Percent of total amount of money used, in each state, by all cooperators on Ribes eradication project, expended by individuals in New England and New York.

Year	Maine	N.H.	Vt.	Mass.	Conn.	N.Y.	Totals
1928	42.3	11.1	84.6	35.7	24.3	46.2	34.6
1927	41.4	9.1	86.3	32.9	17.0	41.6	32.0

4 (a). Comparison of the percentage of the cost to individuals, in each state, to the total cost to individuals in New England and New York for the project - "Ribes Eradication" during 1927 and 1928:

Year	Maine	N.H.	Vt.	Mass.	Conn.	N.Y.	Totals
1928	17.5	8.3	10.6	17.3	3.6	42.7	100.0
1927	19.0	7.6	14.5	17.2	3.0	38.7	100.0

5. Percent of total amount of money used, in each state, by all cooperators on "Ribes Eradication" project, expended from town funds:

Year	Maine	N.H.	Vt.	Conn.	Totals
1928	44.3	67.1	1.6	19.1	24.7
1927	37.0	70.6	0.7	11.5	25.0

6. Percent of total funds used on "Ribes Eradication" project by all cooperators, in each state, expended from state appropriations in New England and New York:

Year	Maine	N.H.	Vt.	Mass.	R.I.	Conn.	N.Y.	Totals
1928	8.0	21.8	13.8	62.6	100.0	28.4	53.8	38.2
1927	6.8	20.3	13.0	61.1	100.0	69.2	58.4	39.7

6-(a). Percent of total state blister rust appropriation used on project "Ribes Eradication" in each of the states of New England and New York:

Year	Maine	N.H.	Vt.	Mass.	R.I.	Conn.	N.Y.	Totals
1928	29.3	46.6	40.9	89.1	94.6	39.8	39.1	48.5
1927	27.3	43.9	51.6	87.5	99.6	59.9	41.3	50.5

7. The expenditure under the heading "All Other State Funds" was for eradication work done by other state departments on state lands in Massachusetts, and by the State Forestry Department in Connecticut. This expenditure of \$627.19 represents 0.4% of the total amount of money spent by all cooperators on "Ribes Eradication" in the Northeastern States. The Massachusetts expenditure of \$444.54 was 1.7% of the total funds spent on "Ribes Eradication" in that state, while the money expended in Connecticut from this source (\$182.65) was 2.3% of the total cost of "Ribes Eradication" in that state.

8. The Federal expenditure of \$3311.52 was for Ribes scouting performed by temporary agents in Maine and Connecticut, and a small amount of work done by Agent Baker of New York in connection with protection of plantations. This Federal expenditure represents 2.1% of the entire costs of "Ribes Eradication" in 1928.

PERCENT OF TIME SPENT ON EACH ACTIVITY BY AVERAGE PERMANENT
AGENT IN NEW ENGLAND AND NEW YORK DURING 1928.

State	Education		Personal Service		Supervision		Field Data		Scouting	Office (Routine)	Travel
	Office	Field	Office	Field	Office	Field	Office	Field			
Maine	1.0	4.6	.5	12.5	1.2	19.9	1.5	3.0	2.9	27.0	25.9
N.H.	4.8	6.2	.7	17.0	1.4	17.0	3.2	7.1	7.7	10.5	24.4
Vt.	3.2	8.7	1.9	26.2	1.0	11.3	1.5	7.5	3.9	11.0	23.8
Mass.	3.4	5.7	.2	14.1	3.5	21.9	2.2	4.5	3.6	16.9	24.0
R.I.	18.4	11.8	7.3	5.8	5.5	8.3	3.3	4.5	3.3	16.0	15.8
Conn.	6.3	12.1	2.8	13.4	4.5	11.8	4.3	3.8	6.2	13.2	21.6
N.Y.	1.9	3.4	.8	14.9	3.1	11.4	4.5	8.4	10.8	17.8	23.0
Totals	3.7	5.8	1.0	15.8	2.4	16.1	2.9	6.2	6.4	15.9	23.8

For the first time since the revised weekly itinerary forms were put in use, it is possible to compile a summary on the basis of the changes, in this report; namely, limiting the project "Office" to routine office work, and dividing the projects - "Education, Service, Supervision, and Field Data" into the two classes of such work - "Office" and "Field".

During 1928, the 33 permanent agents and 19 temporary agents worked a total of 98,762 hours; 13.5% of which was performed by the temporary men. The average permanent agent worked 333.8 eight hour working days during the year.

In compiling the time data, shown in the above table, the hours worked by agents Baker and Strait in New York were not included, as these men were assigned to special projects. Also, the time spent by Agents Clave and Doore of Massachusetts, on special assignments, was not included.

PERSONNEL EMPLOYED ON COOPERATIVE B. R. C. WORK
IN NEW ENGLAND AND NEW YORK DURING 1928.
(Regardless of length of time worked)

State	State Leaders and Assistant Leaders	Permanent B.R.C. Agents	Temporary B.R.C. Agents	State Checkers and Eradication Assistants	State Foremen	State Scouts	State Laborers	Owners' Labor	TOTAL
Maine	1	4	19	0	80	*	34	1344	1482
N.H.	1	8	0	4	27	25	223	-	288
Vt.	0	3	0	0	6	0	40	50	99
Mass.	1	7	0	0	31	0	0	2689	2728
R.I.	0	1	0	0	1	5	0	0	7
Conn.	1	1	4	0	5	5	25	13	54
N.Y.	2	9	0	9	65	6	90	2898	3079
TOTALS	6	33	23	13	215	41	412	6994	7737

*Included with "Temporary Blister Rust Control Agents".

During 1928, a total of 743 state and federal employees were engaged in cooperative blister rust control work in New England and New York. In addition, 6994 individuals (pine or Ribes owners, or their employees) assisted in eradicating Ribes. Thus, 7737 persons actually participated in the field work. Also, many owners paid for the work on their lands, but took no personal part in pulling the bushes; and several hundred other persons permitted the destruction of their cultivated bushes without compensation. Estimated conservatively, 8000 persons had more or less of an active part in the control work. The agents also reported that 6497 individuals gave their general support to the work; making a total of approximately 14,500 people who cooperated directly or indirectly in the control work.

STATE AND FEDERAL COOPERATIVE BLISTER RUST CONTROL FUNDS USED
FOR ALL PROJECTS IN NEW ENGLAND AND NEW YORK DURING THE CALENDAR YEAR 1928.

Source of Funds	State Appropriations	Nursery Funds	Town Funds	Individual Funds or Labor	Other Coop. State Funds	Total State Funds	Total Federal For \$ funds	Total State and Federal Funds
Maine	\$6137.60	\$500.00	\$10,009.07	\$9567.09	-	\$26,213.76	\$21,124.58	\$47,338.64
N.H.	19,146.94	-	27,390.19	4534.14	-	51,071.27	31,527.18	82,598.45
Vt.	2313.72	-	109.60	5629.97	-	8,253.29	10,430.15	18,683.44
Mass.	18,562.10	2993.17	-	9443.65	\$444.54	31,443.46	20,840.15	52,283.61
R.I.	2780.57	500.00	-	-	-	3,280.57	2,440.07	5,720.64
Conn.	5722.91	-	1529.87	1950.64	182.05	9,386.07	9,623.18	19,009.25
N.Y.	71,007.18	-	-	23,342.19	-	94,349.37	29,134.21	123,483.58
TOTALS	\$125,671.02	\$3993.17	\$39,038.73	\$54,667.68	\$627.19	\$223,997.79	\$131,129.82	\$355,127.61

1. The Government paid 36.9% and the states and their cooperators 63.1% of the total costs of all cooperative blister rust control activities in New England and New York during 1928.

2. Comparison of cooperative expenditures in New England and New York paid from various sources during 1927 and 1928:

Source of Funds	Amount Expended 1927	Amount Expended 1928	% + or - Over 1927	Percent of Total Expenditures	
				1927	1928
Federal \$ For \$ Money	\$132,460.90	\$131,129.82	-1.0	38.4	36.9
State Appropriations	120,566.14	125,671.02	+4.2	34.9	35.4
Town Appropriations	38,299.74	39,038.73	+1.9	11.1	11.0
Individual Funds	49,040.81	54,667.68	+11.5	14.2	15.4
Nursery Funds	3,213.41	3,993.17	+24.2	0.9	1.1
All Other State Funds	1,767.50	627.19	-64.5	0.5	0.2
TOTAL FUNDS	\$345,348.50	\$355,127.61	+2.8	100.0	100.0

3. Comparison of amount of state funds derived from various sources during 1927 and 1928 in New England and New York:

Source of Funds	Percent of Total State Funds	
	1927	1928
State Appropriations	56.7	56.1
Town Appropriations	18.0	17.4
Individual Funds	23.0	24.4
Nursery Funds	1.5	1.8
All Other State Funds	0.8	0.3

A total of \$223,997.79 state money was expended during 1928. This is \$11,110.19 more than was spent in 1927, and represents an increase of 5.4%.

4. Comparison of percent of total state funds, in each state, derived from State Appropriations in New England and New York:

State	Maine	N.H.	Vt.	Mass.	R.I.	Conn.	N.Y.	Total
1927	23.6	36.8	22.5	59.3	77.3	79.4	77.2	56.7
1928	23.4	37.5	28.0	59.0	84.8	60.9	75.3	56.1

All states, except Connecticut spent more money from state appropriations in 1928 than during the previous year. However, the percentage of total state funds derived from state appropriations decreased in three states as follows: Maine - 0.2%; Massachusetts - 0.3%; New York - 1.9%; and for all states - 0.6%.

5. Percent of total state funds, in each state, expended from Town Appropriations:

Year	Maine	N.H.	Vt.	Conn.	Total
1927	35.0	56.0	0.6	8.0	18.0
1928	38.2	53.6	1.3	16.3	17.4

Even though \$738.99 more town money was expended during 1928 than in 1927, there was a decrease of 0.6% in the total state funds derived from this source. In all of the four states listed above, except New Hampshire, more town money was expended during 1928, and corresponding increases occurred in the proportionate share of total state funds used from this source, in all states, except New Hampshire.

6. Percent of total state funds, in each state, expended by Individual Cooperators in New England and New York:

Year	Maine	N.H.	Vt.	Mass.	Conn.	N.Y.	Total
1927	39.3	7.2	76.9	27.9	11.7	22.8	23.0
1928	36.5	8.9	70.7	30.1	20.8	24.7	24.4

In all states, except Vermont, more individual cooperation was obtained in 1928 than during the preceding year. However, in Maine, the proportionate share of total state funds expended from this source was 2.8% less than in 1927.

7. Special nursery funds were used in three states (Maine, Massachusetts, and Rhode Island) during 1928. In Massachusetts, the \$2993.17 expenditure was for nursery sanitation work, which is reported in detail on page 81. The Rhode Island money was a special allotment for nursery inspection and general supervision, while in Maine the funds were used, for nursery inspection, under Briscoes' direction.

8. The expenditure listed under "All Other Cooperative State Funds" represents money spent on control work by other state departments in Massachusetts, and the state forestry department in Connecticut.

9. Total state funds expended during 1927 and 1928 in New England and New York:

State	1927	1928	% Increase or Decrease Over 1927
Maine	\$23,744.88	\$26,213.76	+10.4
N.H.	51,565.45	51,071.27	-1.0
Vt.	9,239.71	8,253.29	-10.7
Mass.	30,284.78	31,443.46	+3.8
R.I.	2,206.71	3,280.57	+48.7
Conn.	12,551.84	9,386.07	-25.2
N.Y.	83,294.20	94,349.37	+13.3
TOTALS	\$212,887.60	\$223,997.79	+5.4

10. Federal \$ for \$ cooperative funds expended in New England and New York during 1927 and 1928:

State	1927	1928	% Increase or Decrease Over 1927
Maine	\$21,636.80	\$21,124.88	-2.4
N.H.	33,805.24	31,525.18	-6.7
Vt.	10,512.00	10,430.15	-0.8
Mass.	24,681.12	26,846.15	+8.8
R.I.	1,649.19	2,446.07	+48.3
Conn.	8,613.00	9,623.18	+11.7
N.Y.	31,563.55	29,134.21	-7.7
TOTALS	\$132,460.90	\$131,129.82	-1.0

11. Percent of total state and federal funds, in each state, expended from federal \$ for \$ money in New England and New York:

Year	Maine	N.H.	Vt.	Mass.	R.I.	Conn.	N.Y.	Totals
1927	47.7	39.6	53.2	44.9	42.8	40.7	27.5	33.4
1928	44.6	38.2	55.8	46.1	42.7	50.6	23.6	36.9

During the calendar year 1928, federal funds were matched on a \$ for \$ basis in all states except Vermont and Connecticut, where federal expenditures exceeded those of the state by \$2176.86 and \$237.11, respectively. However, on the basis of the fiscal year, Connecticut will meet its obligations, and special arrangements have been made in Vermont in an effort to match federal expenditures by the end of the fiscal year 1929.

The proportional part of the total costs paid by the Government, in each state, during 1928, ranged from 23.6% in New York to 55.8% in Vermont.

Item 10 shows there were decreases in federal expenditures in four of the seven Northeastern States, and a decrease of 1.0% for all states over the previous year. The apparently large increase in Rhode Island is due to the fact that no agent was employed in that state during

the first $3\frac{1}{2}$ months of 1927. The increase in Massachusetts was caused partly by Wheeler not being employed on quarantine inspection for as long a period as in 1927. Salary increases and the employment of four temporary agents during the summer months was responsible for the increase of federal expenditures in Connecticut.

TOTAL STATE AND FEDERAL EXPENDITURES, BY PROJECTS,
IN NEW ENGLAND AND NEW YORK DURING CALENDAR YEAR 1928.

STATE AND FEDERAL COOPERATIVE BLISTER RUST CONTROL EXPENDITURES, BY PROJECTS,
IN NEW ENGLAND AND NEW YORK DURING THE CALENDAR YEAR 1928.

In order to give a clear conception of cooperative expenditures, by projects, the following summary lists comparative data for the years 1924 to 1928, inclusive. (For basis of projects, see detailed description for each state on sheets number 65 to 72.)

Summary of Total State and Federal Expenditures, By Projects,
in New England and New York.

Year	1924	1925	1926	1927	1928
Total Amount Expended					
By All Cooperators	\$341,681.52	\$313,971.52	\$324,306.33	\$345,348.50	\$355,127.61
Percent of total, by projects:					
Ribes Eradication.....	49.5	44.1	45.7	44.4	44.5
B.R.C.A.A.....	33.2	37.6	35.1	33.7	32.8
Supervision.....	9.5	10.6	11.2	6.9	6.4
Inspection.....	2.8	2.8	0.9	4.8	5.6
Field Data.....	3.5	2.7	3.5	6.6	5.8
Miscellaneous.....	1.2	1.7	3.4	2.0	1.7
Ribes Compensation.....	0.1	0.5	0.2	0.5	0.5
Nursery Sanitation.....	-	-	-	1.1	1.6
Black Currant Eradication....	-	-	-	-	1.1

Summary of Total State Expenditures, By Projects, in New England and New York.

Total Amount Cooperative					
State Expenditures	\$218,849.56	\$182,872.40	\$194,038.26	\$212,887.60	\$223,997.79
Percent of total, by projects:					
Ribes eradication.....	75.5	74.6	75.1	70.4	69.1
Supervision.....	6.8	7.3	7.8	2.9	3.4
B.R.C.A.A.....	5.8	5.2	4.5	2.4	1.9
Field Data.....	5.5	4.7	5.7	10.8	9.1
Inspection.....	4.2	4.5	1.5	7.7	8.9
Miscellaneous....	1.9	2.8	5.1	3.2	2.6
Ribes Compensation.....	0.2	0.9	0.3	0.8	0.8
Nursery Sanitation.....	-	-	-	1.8	2.5
Black Currant Eradication....	-	-	-	-	1.7

Summary of Total Federal Expenditures, By Projects, in New England and New York.

Total Amount Federal					
Expenditures	\$122,831.96	\$131,098.84	\$130,268.07	\$132,460.90	\$131,129.82
Percent of Total, by Projects:					
B.R.C.A.A.....	82.1	82.8	80.7	84.1	85.6
Supervision.....	14.3	15.3	16.4	13.3	11.6
Ribes Scouting (Erad.)....	3.2	1.6	2.1	2.6	2.5
Inspection (Checking).....	0.4	0.3	-	-	-
Miscellaneous.	-	-	0.6	-	-
Field Data.....	-	-	0.2	-	-
Nursery sanitation.....	-	-	-	-	0.3

Percent Of Total Cost Of Projects In New England And New York
Paid By Government.

Year	1924	1925	1926	1927	1928
B.R.C.A.A.....	88.8	91.9	92.3	95.7	96.4
Supervision.....	54.0	60.1	58.6	73.9	66.6
Ribes Scouting (Eradication)....	2.4	1.5	1.8	2.3	2.1
Inspection (Checking).....	4.6	4.5	-	-	-
Field Data.....	-	-	2.6	-	-
Nursery Sanitation.....	-	-	-	-	6.0
Miscellaneous.....	-	-	7.9	-	-

STATE AND FEDERAL EXPENDITURES ON PROJECT "SUPERVISION"
IN NEW ENGLAND AND NEW YORK DURING 1928.

State	Amount Paid By State	Amount Paid By Gov't.	Total Amount Paid	% Supervision Paid By		% Total State Expend- itures Paid For Super.	% Total Gov't. Expend- itures Paid For Super.	% Total Expenditures (All Projects) Paid For Super.
				State	Gov't.			
Maine	\$1215.90	\$3130.01	\$4345.91	28.0	72.0	4.0	14.0	9.2
N.H.	2654.87	3694.50	6349.37	41.8	58.2	5.2	11.7	7.7
Vt.	1076.84	1450.77	2527.61	42.6	57.4	13.0	13.9	13.2
Mass.	513.20	3329.96	3843.16	13.4	86.6	1.6	12.4	6.0
R.I.	250.00	610.81	860.81	29.1	70.9	7.0	25.0	15.0
Conn.	664.73	986.53	1651.26	40.3	59.7	7.1	10.2	8.1
N.Y.	1276.90	2054.29	3331.19	38.3	61.7	1.4	7.0	2.7
TOTALS	\$7652.44	\$15,256.87	\$22,909.31	33.4	66.6	3.4	11.6	6.4

1. The expenditures made on this project include salaries and expenses of all the state leaders, except McIntyre; also in New Hampshire, Vermont, Massachusetts, and Connecticut, the wages paid clerks (one in each state) for their time spent on blister rust control work. In Vermont, one quarter of Holden's time was charged to this project, also Merrill's time while on blister rust work. In addition, Commissioner Ross charged his expenses, while on blister rust supervisory work, to this project. (The state expenditure in Rhode Island represents the amount allotted for the supervisory activities of Stene and Lewis.) One fourth of Hurford's time was charged to "Supervision", and in Connecticut, one quarter of Riley's time was similarly listed under this project. McIntyre's salary and expenses in New York are paid from other funds, and no charge is made against "Blister Rust Control". All of York's time was recorded under "Field Data". The state expenditure of \$1276.90 in New York was for a new car purchased for McIntyre.

2. In comparing total expenditures for "Supervision" in the various states during 1928 with the previous year, increases are noted as follows: New Hampshire, 19.6%; Vermont, 12.1%; and Rhode Island, 108.7%; while decreases occurred in Maine, 13.6%; Massachusetts, 4.1%; Connecticut, 41.9%; and New York, 49.2%. The increase in New Hampshire was due to more temporary clerical assistants being employed at the Concord office during the summer months. In Vermont, the state expenditure for Merrill and Ross was greater

than in 1927, while the apparently large increase in Rhode Island is due to no agent being employed in that state during the first $3\frac{1}{2}$ months of 1927 and no charge being made against "Supervision" last year for Stene's and Lewis' time. The decrease of 13.6% in Maine during 1928 can be attributed to the purchase of a new automobile for Frost on state funds in 1927. Only one quarter of Riley's time was charged to "Supervision" during 1928 compared with one-half in 1927. The 49.2% decrease in New York was caused by assistant state leader Kennedy being employed only part of the year.

STATE AND FEDERAL COOPERATIVE EXPENDITURES ON
PROJECT - "BLISTER RUST CONTROL AGENT ACTIVITIES"
IN NEW ENGLAND AND NEW YORK DURING 1928.

State	Amount Paid By State	Amount Paid By Gov't.	Total Amount Paid	% B.R.C.A.A. Paid By		% Total State Expend- itures Paid For B.R.C.A.A.	% Total Gov't. Expend- itures Paid For B.R.C.A.A.	% Total Expenditures (All Projects) Paid For B.R.C.A.A.
				State	Gov't.			
Maine	\$3104.93	\$16,771.48	\$19,876.41	15.6	84.4	11.9	79.4	42.0
N.H.	161.59	27,830.68	27,992.27	0.6	99.4	0.3	88.3	33.9
Vt.	-	8,979.38	8,979.38	-	100.0	-	86.1	48.1
Mass.	65.25	23,168.69	23,233.94	0.3	99.7	0.2	86.3	39.9
R.I.	112.90	1,835.26	1,948.16	5.6	94.2	3.4	75.0	34.0
Conn.	112.80	6,563.52	6,676.32	1.7	98.3	1.2	68.2	35.1
N.Y.	605.00	27,064.92	27,669.92	2.2	97.6	0.6	92.9	22.4
TOTALS	\$4162.47	\$112,213.93	\$116,376.40	3.0	96.4	1.9	85.6	32.8

1. The funds expended on this project paid the salaries and expenses of the blister rust control agents and, in a few cases, co-operative scouts doing similar work. It also includes small expenditures for educational material. In Vermont, Connecticut and Rhode Island, three-quarters of the state leaders salaries and expenses were charged to "Blister Rust Agent Activities." The state expenditure in New York was for Agent Nichols' expenses.

2. Comparing total expenditures for "Blister Rust Control Agent Activities" in the various states during 1928 with the previous year, increases occurred in Rhode Island, 57.6%; Maine, 16.6%; Massachusetts, 7.6%. Decreases are noted in New Hampshire, 8.8%; New York, 7.3%; Vermont, 2.4%; and Connecticut, 0.5%. The large increase in Rhode Island is due to no agent being employed in that state during the first 3½ months of 1927.

STATE AND FEDERAL EXPENDITURES ON PROJECT - "RIBES ERADICATION"
IN NEW ENGLAND AND NEW YORK DURING 1928.

State	Amount Paid By State	Amount Paid By Gov't.	Total Amount Paid	% Ribes Erad. Paid By		% Total State Expenditures Paid For Ribes Eradication	% Total Gov't. Expenditures Paid For Ribes Eradication	% Total Expendi- tures (All Pro- jects) Paid For Ribes Eradication
				State	Gov't.			
Maine	\$21,374.51	\$1223.39	\$22,597.90	94.6	5.4	81.5	5.6	47.1
N.H.	40,844.96	-	40,844.96	100.0	-	80.0	-	49.4
Vt.	6,886.37	-	6,886.37	100.0	-	83.5	-	36.9
Mass.	26,428.59	-	26,428.59	100.0	-	84.1	-	45.3
R.I.	2,629.64	-	2,629.64	100.0	-	80.2	-	45.9
Conn.	5,940.71	2073.13	8,013.84	74.2	25.8	61.1	21.6	41.0
N.Y.	50,590.43	15.00	50,605.43	99.97	0.03	53.6	0.05	41.0
TOTALS	\$154,695.21	\$3311.52	\$158,006.73	97.9	2.1	69.1	2.5	44.5

1. The expenditures for "Ribes Eradication" paid the wages of men employed in pulling Ribes, including owners' labor, linemen, scouts, and foremen. In New York, the board and lodging cost of the men in the state camp is also included. However, the wages of these men are correspondingly lower than in the other states.

2. The federal expenditures were for several temporary men used on Ribes scouting in Maine and Connecticut, and for a small amount of such work performed by Agent Baker in New York.

3. Although three of the seven Northeastern States spent less money during 1928 on "Ribes Eradication" than during the previous year, the total amount increased by \$4704.32 or 3.1%.

STATE EXPENDITURES ON PROJECT - "ERADICATION ASSISTANTS AND CHECKERS"
IN NEW ENGLAND AND NEW YORK DURING 1928.

State	Amount Paid By State	% Total State Expenditures Paid For Eradication Assistants and Checkers	% Total State and Federal Expenditures Paid For Eradication Assistants and Checkers
N.H.	\$3,208.67	6.3	3.9
N.Y.	16,798.75	17.8	13.6
TOTALS	\$20,007.42	8.9	5.6

This expenditure in New Hampshire was for four state checkers during the period May 1 to September 30, while the New York amount covers the cost of the eradication assistants.

Such expenditures, although closely allied to the project - "Ribes Eradication", are considered as a separate project.

STATE EXPENDITURES ON PROJECT - "RIBES COMPENSATION"
IN NEW ENGLAND AND NEW YORK DURING 1928.

State	Amount Paid By State	% Total State Expend- itures Paid For "Ribes Compensation"	% Total State and Federal Expenditures (All Projects) Paid For "Ribes Compensation"
N.H.	\$1.34	0.002	0.001
Vt.	6.00	0.1	0.03
Mass.	1443.25	4.6	2.5
N.Y.	299.95	0.3	0.2
TOTALS	\$1750.54	0.8	0.5

The compensation listed for Massachusetts was for bushes destroyed in 1927. In this state compensation claims for cultivated Ribes destroyed during 1928 are not settled until the spring of 1929.

STATE AND FEDERAL EXPENDITURES FOR PROJECT - "NURSERY SANITATION"
IN NEW ENGLAND AND NEW YORK DURING 1928.

State	Amount Paid By State	Amount Paid By Gov't.	Total Amount Paid	% "Nursery Sanitation" Paid By		% Total State Ex- penditures Paid For "Nursery Sanitation"	% Total Gov't. Ex- penditures Paid For "Nursery Sanitation"	% Total State and Gov't. Ex- penditures (All Projects) Paid For "Nursery Sanit"
				State	Gov't.			
Maine	\$500.00	-	\$500.00	100.0	-	1.9	-	1.1
Mass.	2993.17	\$347.50	3340.67	89.6	10.4	9.5	1.3	5.7
R.I.	250.00	-	250.00	100.0	-	7.6	-	4.4
N.Y.	1707.72	-	1707.72	100.0	-	1.8	-	1.4
TOTALS	\$5450.89	\$347.50	\$5798.39	94.0	6.0	2.5	0.3	1.6

The Maine expenditure was for inspection work in state nurseries. In Massachusetts, The State Department Of Agriculture expended \$2993.17 in eradicating Ribes from official control areas established around several commercial nurseries. The Rhode Island money was a special allotment for inspection of nurseries. The New York expenditure represents the cost of state men employed on this project. In addition, Agents Baker and Strait spent a considerable part of their time on this work. However, no separate cost figures are available for their time on this project. The Connecticut nursery sanitation work is included with the Ribes eradication project, as definite acreage, Ribes, and cost figures were obtained for all control work around cooperating nurseries.

STATE EXPENDITURES FOR PROJECT - "FIELD DATA".

State	Amount Paid By State	% Total State Expendi- tures Paid For "Field Data"	% Total State and Federal Expenditures Paid For "Field Data"
N.H.	\$4018.40	7.9	4.9
R.I.	38.03	1.2	0.7
Conn.	2424.74	25.8	12.8
N.Y.	13,957.87	14.8	11.3
TOTALS	\$20,439.04	9.1	5.8

The money spent on this project in New Hampshire was the cost of the state checkers during the period January 1 to April 30 and October 1 to December 31, when they were employed on special field studies.

The expenditure in Connecticut was for scouting to eliminate non-pine areas.

The large expenditure in New York includes the cost of York, Littlefield, and Snell on investigational work.

STATE EXPENDITURES FOR PROJECT - "MISCELLANEOUS".

State	Amount Paid By State	% Total State Expendi- tures Paid For "Miscellaneous"	% Total State and Federal Expenditures Paid For "Miscellaneous"
Maine	\$18.42	0.1	0.04
N.H.	181.44	0.3	0.2
Vt.	284.08	3.4	1.5
Conn.	243.09	2.6	1.3
N.Y.	5179.61	5.5	4.2
TOTALS	\$5906.64	2.6	1.7

In addition, a total of \$3933.14 was expended in New York on "Black Currant Eradication". This work is closely allied to the regular "Ribes Eradication" project, but is considered as a separate item. Most of this work was confined to control areas and nursery growing sections.

SUMMARY OF STATE AND FEDERAL EXPENDITURES, BY PROJECTS,
IN NEW ENGLAND AND NEW YORK DURING 1928.

Project	State Expendi- tures	Gov't. Expendi- tures	Total Expendi- tures	% Total State Expend.	% Total Gov't. Expend.	% Total State And Gov't. Expend.
Supervision	\$7652.44	\$15,256.87	\$22,909.31	3.4	11.6	6.4
Ribes Eradication	154,695.21	(Scouting) 3,311.52	158,006.73	69.1	2.5	44.5
B.R.C.A.A.	4,162.47	112,213.93	116,376.40	1.9	85.6	32.8
Ribes Com- pensation	1,750.54	-	1,750.54	0.8	-	0.5
Nursery Sanitation	5,450.89	347.50	5,798.39	2.5	0.3	1.6
Erad.Assist. and Checkers	20,007.42	-	20,007.42	8.9	-	5.6
Field Data	20,439.04	-	20,439.04	9.1	-	5.8
Misc.	5,906.64	-	5,906.64	2.6	-	1.7
C. Erad- ication	3,933.14	-	3,933.14	1.7	-	1.1
TOTALS	223,997.79	\$131,129.82	\$355,127.61	100.0	100.0	100.0

For basis of projects, see detailed description for each
state on following sheets.

PROJECT SUMMARY OF 1928 EXPENDITURES IN
EACH OF THE NORTHEASTERN STATES.

STATE AND FEDERAL EXPENDITURES IN MAINE
DURING 1928 BY PROJECTS.

Project	Amount Paid by State	Amount Paid by Gov't.	Total Amount Paid	% Total State Exp. Paid For	% Total Gov't. Exp. Paid For	% Total Exp. (All Projects) Paid For
Supervision	\$1,215.90	\$3,130.01	\$4,345.91	4.6	14.8	9.2
Ribes Eradication	\$21,374.51	\$1,223.39	\$22,597.90	81.5	5.8	47.7
B.R.C.A.A.	\$3,104.93	\$16,771.48	\$19,876.41	11.9	79.4	42.0
Ribes Com- pensation	0	0	0	-	-	-
Nursery Sanitation	\$500.00	0	\$500.00	1.9	-	1.1
Miscella- neous	\$18.42	0	\$18.42	0.1	-	0.04
TOTALS	\$26,213.76	\$21,124.88	\$47,338.64	100.0	100.0	100.0

Basis For Projects

Supervision: Salary and expenses of state leader, Government paying salary and state the expenses.

Ribes Eradication: Owners labor, town foremen, time spent by state and federal scouts in scouting for Ribes.

B.R.C.A.A.: Total salary and expenses of permanent agents and part of cost for temporary agents for time spent on B.R.C.A.A.-educational material.

Nursery Sanitation: Funds spent under Briscoe's direction on inspection of state nurseries.

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STATE AND FEDERAL EXPENDITURES IN NEW HAMPSHIRE
DURING 1928, BY PROJECTS.

Project	Amount Paid by State	Amount Paid by Gov't.	Total Amount Paid	% Total State Exp. Paid For	% Total Gov't. Exp. Paid For	% Total Exp. (All Projects) Paid For
Supervision	\$2,654.87	\$3,694.50	\$6,349.37	5.2	11.7	7.7
Ribes Eradication	\$40,844.96	-	\$40,844.96	80.0	-	49.4
B.R.C.A.A.	\$161.59	\$27,830.68	\$27,992.27	0.3	88.3	33.9
Ribes Compensation	\$1.34	-	\$1.34	0.002	-	0.001
Field Data	\$4,018.40	-	\$4,018.40	7.9	-	4.9
Checking	\$3,208.67	-	\$3,208.67	6.3	-	3.9
Miscellaneous	\$181.44	-	\$181.44	0.3	-	0.2
TOTALS	\$51,071.27	\$31,525.18	\$82,596.45	100.0	100.0	100.0

Basis For Projects

Supervision: Salary and expenses of state leader, paid by Government;- salary of blister rust clerk (\$35. per month of which is paid by Government) - and salaries of temporary clerks at Concord Office during eradication season.

Ribes Eradication: Wages and transportation expenses of laborers, scouts and foremen engaged in eradicating Ribes.

B.R.C.C.A.: Salary and expenses of blister rust control agents - educational material.

Field Data: Cost of inspectors, during January-April, and October-December while engaged in special field studies.

Checking: Cost of four inspectors, during May-September, while checking on Ribes eradication.

STATE AND FEDERAL EXPENDITURES IN VERMONT
DURING 1928, BY PROJECTS.

Project	Amount Paid by State	Amount Paid by Gov't.	Total Amount Paid	% Total State Exp. Paid For	% Total Gov't. Exp. Paid For	% Total Exp. (All Projects) Paid For
Supervision	\$1076.84	\$1,450.77	\$2,527.61	13.0	13.9	13.5
Ribes Eradication	\$6886.37	-	\$6,886.37	83.5	-	36.9
B.R.C.A.A.	-	\$8,979.38	\$8,979.38	-	86.1	48.1
Ribes Compensation	\$6.00	-	\$6.00	0.1	-	0.03
Miscellaneous	\$284.08	-	\$284.08	3.4	-	1.5
TOTALS	\$8253.29	\$10,430.15	\$18,683.44	100.0	100.0	100.0

Basis For Projects

Supervision: One-fourth of Holden's Federal salary and expenses; time spent by Merrill on blister rust work, and expenses of Ross while in field on blister rust work, paid by state. Government also paid a part time clerk, at the Montpelier Office, \$50. per month.

Ribes Eradication: Owners labor and wages of foremen; state pays cost of transportation of foremen between jobs.

B.R.C.A.A.: Total salary and expenses of Bradder and Rose; three-fourths cost of Holden's salary and expenses, paid by Government.

STATE AND FEDERAL EXPENDITURES IN MASSACHUSETTS
DURING 1928, BY PROJECTS.

Project	Amount Paid by State	Amount Paid by Gov't.	Total Amount Paid	% Total State Exp. Paid For	% Total Gov't. Exp. Paid For	% Total Exp. (All Projects) Paid For
Supervision	\$513.20	\$3,329.96	\$3,843.16	1.6	12.4	6.6
Ribes Eradication	\$26,428.59	-	\$26,428.59	84.1	-	45.3
B.R.C.A.A.	\$65.25	\$23,168.69	\$23,233.94	0.2	86.3	39.9
Ribes Compensation	\$1,443.25	-	\$1,443.25	4.6	-	2.5
Nursery Sanitation	\$2,993.17	\$347.50	\$3,340.67	9.5	1.3	5.7
TOTALS	\$31,443.46	\$26,846.15	\$58,289.61	100.0	100.0	100.0

Basis Of Projects

Supervision: Salary and expenses of state leader, former paid by Government, latter by state; \$20. per month paid by Government to part time clerk for assistance on blister rust work.

Ribes Eradication: Owners labor; state inspectors (scouts, foremen.)

B.R.C.A.A.: Salary and expenses of blister rust control agents; educational materials.

Nursery Sanitation: Cost of inspecting nurseries and their environs for Ribes and eradicating such bushes, paid from special state nursery funds. The federal expenditure under this project was for the salaries paid to Neil and Francis for a short period during the spring of 1928.

STATE AND FEDERAL EXPENDITURES IN RHODE ISLAND
DURING 1928, BY PROJECTS.

Project	Amount Paid by State	Amount Paid by Gov't.	Total Amount Paid	% Total State Exp. Paid For	% Total Gov't. Exp. Paid For	% Total State and Gov't. Exp. (All Projects) Paid For
Supervision	\$250.00	\$610.81	\$860.81	7.6	25.0	15.0
Ribes Eradication	\$2629.64	-	\$2629.64	80.2	-	45.9
B.R.C.A.A.	\$112.90	\$1835.26	\$1948.16	3.4	75.0	34.0
Nursery Sanitation	\$250.00	-	\$250.00	7.6	-	4.4
Field Data	\$38.03	-	\$38.03	1.2	-	0.7
TOTALS	\$3280.57	\$2446.07	\$5726.64	100.0	100.0	100.0

Basis Of Projects

Supervision: One-fourth of Hurford's federal salary and expenses, state expenditure represents amount allotted for supervisory activities of Lewis and Stene.

Ribes Eradication: Wages and transportation expenses of six state scouts.

B.R.C.A.A.: Three-fourths of Hurford's federal salary and expenses, state expenditure for educational material, printing, etc.

Nursery Sanitation: \$250. state money allotted for inspection of nurseries.

STATE AND FEDERAL EXPENDITURES IN CONNECTICUT
DURING 1928, BY PROJECTS.

Project	Amount Paid by State	Amount Paid by Gov't.	Total Amount Paid	% Total State Exp. Paid For	% Total Gov't. Exp. Paid For	% Total Exp. (All Projects) Paid For
Supervision	\$664.73	\$986.53	\$1,651.26	7.1	10.2	8.7
Ribes Eradication	\$5728.41	\$2073.13	\$7,801.54	61.1	21.6	41.0
B.R.C.A.A.	\$112.80	\$6563.52	\$6,676.32	1.2	68.2	35.1
Ribes Compensation	-	-	-	-	-	-
Nursery Sanitation	\$212.30	-	\$212.30	2.2	-	1.1
Field Data	\$2424.74	-	\$2424.74	25.8	-	12.8
Miscellaneous	\$243.09	-	\$243.09	2.6	-	1.3
TOTALS	\$9386.07	\$9623.18	\$19,009.25	100.0	100.0	100.0

Basis Of Projects

Supervision: One-quarter of Riley's federal salary and expenses - blister rust expenses for Filley - \$50. per month paid to clerk out of state blister rust funds.

Ribes Eradication: Owners labor, state laborers, scouts and foremen.

B.R.C.A.A.: Salary and expenses of Miles and Clark, and three-quarters of cost for Riley - educational material.

Nursery Sanitation: Paid from state blister rust appropriation to employ men on Ribes scouting around nurseries.

Field Data: Cost of scout work to eliminate non-pine areas. In this connection, 232,375 acres were eliminated during 1928 as not containing sufficient pine to justify the cost of eradicating Ribes.

STATE AND FEDERAL EXPENDITURES IN NEW YORK
DURING 1928, BY PROJECTS.

Project	Amount Paid by State	Amount Paid by Gov't.	Total Amount Paid	% Total State Exp. Paid For	% Total Gov't. Exp. Paid For	% Total Exp. (All Projects) Paid For
Supervision	\$1,276.90	\$2,054.29	\$3,331.19	1.4	7.05	2.7
Ribes Eradication	\$50,590.43	\$15.00	\$50,605.43	53.6	0.05	41.0
Eradication Assistants	\$16,798.75	-	\$16,798.75	17.8	-	13.6
B.R.C.A.A.	\$605.00	\$27,064.92	\$27,669.92	0.6	92.9	22.4
Field Data	\$13,957.87	-	\$13,957.87	14.8	-	11.3
Nursery Sanitation	\$1,707.72	-	\$1,707.72	1.8	-	1.4
B.C. Eradication	\$3,933.14	-	\$3,933.14	4.2	-	3.2
Ribes Compensation	\$299.95	-	\$299.95	0.3	-	0.2
Miscellaneous	\$5,179.61	-	\$5,179.61	5.5	-	4.2
TOTALS	\$94,349.37	\$29,134.21	\$123,483.58	100.0	100.0	100.0

Basis For Projects

Supervision: State expenditure was for a new automobile purchased for McIntyre's use, and federal funds used on this project were for assistant state leader Kennedy's salary and expenses. No charge was made for McIntyre's time against blister rust funds.

Ribes Eradication: Owners labor and wages of state laborers, scouts, and foremen; also in many cases, includes subsistence expenses paid to foremen and scouts, and transportation expenses of these men. The federal expenditure of \$15. is the amount allotted for a small amount of scout work performed in co-operation with individual owners by agent Baker.

Eradication Assistants: Salary and expenses of eradication assistants and camp supervisor. These expenses kept separate from project "Ribes Eradication", although closely allied to it.

B.R.C.A.A.: Salary and expenses of blister rust agents paid by Government, except Nichols' expenses which are paid by state.

Field Data: Cost of York, Littlefield, Snell and assistants on field studies.

Nursery Sanitation: State expenditures on work conducted by agents Baker and Strait. It was not possible to determine the cost of the time spent by these two agents on this work; consequently no federal expenditure is listed for this project.

Black Currant Eradication: State expenditures on special black currant eradication work.

Miscellaneous: Includes \$4921.01 expended in connection with "Ribes Eradication" which was not directly chargeable to this project.

SUMMARY, BY STATES, OF COOPERATIVE
BLISTER RUST CONTROL ACTIVITIES IN THE NORTHEASTERN
AND LAKE STATES DURING THE PERIOD 1918 TO 1928, INCLUSIVE.

EXHIBIT A. 1940-1945
1940-1945
1940-1945
1940-1945

SUMMARY, BY STATES, OF COOPERATIVE BLISTER RUST CONTROL ACTIVITIES IN
NORTHEASTERN AND LAKE STATES DURING THE PERIOD 1918-1928, INCLUSIVE.

MAINE

Policy: The state cooperates with towns and individuals in Ribes eradication, by furnishing scouts to systematically examine town control areas to determine the Ribes concentrations, which are to be eradicated by individual owners, working under the supervision of town foremen paid from town funds. The Ribes concentrations cover only about 15 percent of the control areas, consequently the Ribes on 85 percent of the total acreage are eradicated by the scouts. However, the bushes pulled by the scouts represent less than one percent of the total number destroyed.

Acreage of pine: Pure, 588,450 acres; mixed, 1,040,060 acres; pine restocking in types other than pine, 1,549,367 acres; total, 3,177,877 acres.

<u>Cooperation:</u>	<u>Period</u>	<u>No. Individuals</u>	<u>Individual Expenditures</u>	<u>No. Town Appropriations</u>	<u>Town Money Appropriated</u>
	1918-1921	30	\$1,163.07	0	0
	1922-1928	8855	\$61,630.36	291	\$50,288.25
	<u>Totals</u>	8885	\$62,793.43	291	\$50,288.25

<u>Ribes eradication:</u>	<u>Period</u>	<u>Acreage</u>	<u>Ribes Pulled (Wild & Cult.)</u>	<u>Total Cost</u>	<u>Cost Per Acre</u>
(Initial and	1918-1921	180,630	660,308	\$19,708.14	\$.109
re-eradication)	1922-1928	1,971,551	12,598,539	137,083.79	.070
	<u>Totals</u>	2,152,181	13,258,847	\$156,796.93	\$.073

Eradication cost based on total cost of men actually pulling bushes, namely; owners' labor, town foremen and state scouts.

Cultivated Ribes destroyed: 1918-1921, 1579 bushes; 1922-1928, 78,988 bushes; total for period 1918-1928, 80,567 bushes.

Compensation - 1922-1928: None.

Ribes re-eradication: The above acreage includes 4350 acres reworked since 1922.

State forests: None in Maine - Control work in the Arcadia National Park at Mt. Desert Island will be conducted during 1929 by the Park Service in cooperation with the Office of Blister Rust Control.

Plantations: Protection in conjunction with the general control work - compared with other states, there are not many pine plantations in Maine.

Nursery sanitation: Only a few nurseries in the state - all of these have been initially protected by Ribes eradication. Some re-eradication work has also been performed.

Ribes nigrum: The control policy in Maine requires the destruction of all cultivated Ribes in white pine areas. Therefore, black currants are eradicated in connection with the regular town control projects. It will, however, be necessary to make special arrangements for eliminating Ribes nigrum outside the agent districts. Many Ribes americanum are cultivated in Maine, but apparently few Ribes nigrum.

Blister rust surveys: During 1920 and 1921, the white pine types were mapped in several towns in Maine - Briscoe had maps and a report prepared of this work - maps used as a basis for control work and as an estimate of pine values. Strip line infection survey made by Frost in 1920 - the pines on rod wide strips totalling 38.5 miles in length were examined - a total of 7046 pines were inspected, and 6.3% were found infected - 11 plots, totalling 2.7 acres, were laid out adjacent to the strips, 14.4% of the 970 pines in these plots were diseased - data used for educational purposes. Epidemiology survey made during 1926, by agents and Hirt, of white pine and other forest types, Ribes, and infection conditions - maps and summaries prepared at Boston Office.

Infection: General in the commercial range of white pine - based on town units in this region, the percentage of diseased pine ranges from 1 to 10 percent of the total amount of pine - most of the infection has originated since 1918, and is especially abundant in southwestern Maine, notably in Lincoln County - the oldest infection is located at Kittery Point, apparently originated in 1897 from cultivated black currants imported from England. A particularly heavy wave of infection occurred in unprotected areas during 1925.

Investigations: Demonstration control areas at Kittery Point and Brunswick - very little data on these studies available. Infection and effectiveness of control study made by Posey at Kittery Point - report published. Many pine damage plots laid out by agents - used for demonstration purposes - infection data summarized and used by agents in educational work.

Future work: Complete initial control work on 1,824,515 acres (basis: total pine acreage (pure, mixed, and area restocking to pine) plus an additional 1/4 acreage for protection strips minus area cleared of Ribes) - Re-examination of all ^{initial} control areas, 2,147,831 acres, estimate one third, or 715,943 acres will need extensive reworking; as 4350 acres have already been re-eradicated of Ribes since 1922, only 711,593 acres will actually need to be reworked. Determine effectiveness of control by special studies - Elimination of Ribes nigrum from sections not covered by regular control work.

1. The first part of the report is a general introduction to the subject of the study. It discusses the importance of the study and the objectives of the research.

2. The second part of the report is a detailed description of the methodology used in the study. It includes information about the sample size, the data collection methods, and the statistical analysis techniques.

3. The third part of the report presents the results of the study. It includes a summary of the findings and a discussion of the implications of the results. The results show that there is a significant relationship between the variables studied.

4. The fourth part of the report is a conclusion and a list of references. The conclusion summarizes the main findings of the study and provides recommendations for future research. The references list the sources of information used in the study.

5. The fifth part of the report is an appendix containing additional information related to the study. This includes raw data, detailed statistical results, and other supporting materials.

6. The sixth part of the report is a bibliography listing the sources of information used in the study. This includes books, articles, and other publications relevant to the topic.

NEW HAMPSHIRE

Policy: The state cooperates primarily with towns, paying 20 percent of the total costs of the town projects. The control work is performed by state crews (paid from state and town funds) working systematically definite town blocks irrespective of property lines, some cooperation is also obtained from individual owners. The state assists such persons by paying 20 percent of the costs of control work.

Acreage of pine: Pure, 806,977 acres; mixed, 569,487 acres; pine restocking in types other than pine, 304,790 acres; total 1,681,254 acres.

<u>Cooperation:</u>	<u>Period</u>	<u>No. Individuals</u>	<u>Individual Expenditures</u>	<u>No. Town Appropriations</u>	<u>Town Money Appropriated</u>
	1918-1921	162	\$10,317.48	162	\$25,860.00
	1922-1928	446	32,697.91	543	208,140.00
	<u>Totals</u>	<u>608</u>	<u>\$43,015.39</u>	<u>705</u>	<u>\$234,000.00</u>

<u>Ribes eradication:</u>	<u>Period</u>	<u>Acreage</u>	<u>Ribes Pulled (Wild & Cult.)</u>	<u>Total Cost</u>	<u>Cost Per Acre</u>
(Initial and	1918-1921	571,625	6,397,207	\$116,739.79	\$.204
re-eradication)	1922-1928	1,699,740	20,733,347	305,077.76	.179
	<u>Totals</u>	<u>2,271,365</u>	<u>27,130,554</u>	<u>\$421,817.55*</u>	<u>\$.185</u>

In addition on White
Mt. National Forest 1924-1928 6,384 142,556 \$2,271.24 \$.356

*Eradication costs based on total cost of owners labor, state labor, scouts, and foremen.

Cultivated Ribes destroyed: 1918-1921, 61,517 bushes; 1922-1928, 67,250 bushes; total for period 1918-1928, 128,767 bushes.

Compensation - 1922-1928: Number persons paid compensation - 20; total number bushes paid for - 508; total amount paid in reimbursement - \$123.76.

Ribes re-eradication: The above acreage includes 238,313 acres reworked since 1922. This acreage represents over 68 percent of all re-eradication work performed in New England and New York.

Public forests: Initial control work completed in all pine areas of state and national forests. A thorough inspection during 1928 of control areas on the National Forest showed re-eradication work would not be needed at least for a few years.

Plantations: Protection secured in conjunction with town control projects.

During 1927, the agents made special inspection of 89 plantations containing 750,000 trees, in order to determine their condition. A special card record was kept for each plantation, and where possible the owners were interviewed. In conjunction with this work, 61 native stands, containing 5020 acres, were located upon which the owners are practicing forestry.

Nursery sanitation: The state nursery and the two commercial pine growing nurseries in the state have conducted initial and re-eradication work around their properties for several years. In spite of this, considerable pine infection was found in the Keene Nursery during 1928. As a result, this nursery destroyed 30,000 white pine transplants and also arranged for reinspection of the nursery and environs. A single pine infection was also discovered in the state nursery during 1928. A thorough check up will be made at this nursery during the spring.

Ribes nigrum: The town control policy in New Hampshire systematically eliminates cultivated Ribes from all white pine regions, therefore, no special campaign is needed to eradicate black currants. Most of the initial eradication work has been completed in the section of the state where the greater portion of black currants existed.

Blister rust surveys: Because of the general distribution of white pine, a special mapping of such areas is not necessary, especially as the recent epidemiology study gave town information on white pine and other forest types, Ribes, and infection conditions. During 1919, detailed forest type maps were made of the towns of Dover and Kensington - This work developed effective methods of mapping and estimating, and the data were used also for control work and educational purposes. Three years ago, the State Forestry Department completed a forest resource survey, which showed 50 percent of the wood products in New Hampshire were made of white pine. The annual cut of this species varies from 55 to 65 percent of the total lumber cut in the state. Strip line infection surveys were made in 1920 - the pines on rod wide strips, totaling 54.5 miles in length, were examined - a total of 9919 pines were inspected, and 13 percent were found infected - 213 plots, totaling 49.1 acres, were laid out adjacent to the strips; 51.5 percent of the 7014 pines in these plots were diseased. During 1928, a survey was made in 69 backward towns to locate and map the minimum control area, which should be cleared of Ribes to protect the pine. Partly as a result of the facts obtained by this survey, over 30 percent of these towns appropriated for control work in 1929.

Infection: General in commercial pine range, especially severe in northern Connecticut River Valley region - based on town units, the percent of diseased pine ranges from 1-30 percent of the total amount of pine. Also, see strip line data given under "Blister Rust Surveys".

Investigations: Demonstration control areas established at Conway and Wolfeboro - latter area re-checked during 1927 - a report of this study is being prepared by Endersbee. Detailed infection studies made by Endersbee at Hooksett, Hampstead, Sunapee, and Littleton - (reports submitted); by Posey, at Deerfield and Lisbon - (no report); by Richards, at Temple - (preliminary report only). Many damage and demonstration plots laid out by agents - used for educational purposes. Ribes regrowth study made by Newman at Newmarket - (no report submitted).

Office: Maps and records show control work by years - however, most of the early detailed records, by blocks, have been lost or were kept in such poor shape as to be of little value - data since 1922 O.K.

Future work: Complete initial Ribes eradication - 203,618 acres, (basis: total pine acreage (pure, mixed, and area restocking to pine) plus an additional one-third acreage for protection strips minus area cleared of Ribes) - Re-examination of initial control areas, 2,033,052 acres, estimate 50 percent, or 1,016,526 acres, will need intensive reworking. As 233,313 acres have already been re-eradicated of Ribes since 1922, only 778,213 acres will actually need to be reworked by crew methods.

VERMONT

Policy: State cooperation with individual owners, who pay all eradication costs, except excess labor charges for state foremen. In few instances, town money has been obtained to pay the excess labor costs.

Acreage of pine: Pure, 103,376 acres; mixed, 238,562 acres; pine restocking in types other than pine, 284,253 acres; total, 626,191 acres.

<u>Cooperation:</u>	<u>Period</u>	<u>No. Individuals</u>	<u>Individual Expenditures</u>	<u>No. Town Appropriations</u>	<u>Town Money Appropriated</u>
	1918-1921	61	\$4,021.11	0	0
	1922-1928	1487	49,139.76	9	\$605.90
	Totals	1548	\$53,160.87	9	\$605.90

<u>Ribes eradication:</u>	<u>Period</u>	<u>Acreage</u>	<u>Ribes Pulled (Wild & Cult.)</u>	<u>Total Cost</u>	<u>Cost Per Acre</u>
(Initial and	1918-1921	17,978	272,425	\$14,252.51	\$.793
re-eradication)	1922-1928	149,834	1,683,523	58,360.57	.390
	Totals	167,812	1,955,948	\$72,613.08	\$.433

Eradication costs based on total cost of owners labor, and crew foremen -
No scouts employed.

Cultivated Ribes destroyed: 1918-1921, 262 bushes; 1922-1928, 5132 bushes; total for period 1918-1928, 5474 bushes.

Compensation, 1922-1928: Number persons paid compensation - 106, total number bushes paid for - 1277; total amount paid in reimbursement - \$620.16.

Ribes re-eradication: The above acreage includes 14,067 acres reworked since 1922. Most of this work has been done in Windham County.

State forests: Initial control work completed on all the principle pine areas of the state forests, except new additions.

Plantations: State office has fairly complete record of plantations. The agents are supplied with an annual list showing distribution of white pine stock from state nurseries. The plantings in the agents districts are worked in conjunction with the regular control program. Special arrangements will be needed to protect plantations outside the agent districts.

Nursery sanitation: Exclusive of state nurseries, which have been protected from blister rust, there are no nurseries growing white pine where sanitation measures are necessary.

Ribes nigrum: A systematic black currant survey was begun in the agents districts during the fall of 1928. Such work was completed in 13 towns and partially finished in 8 additional towns. A total of 210 *Ribes nigrum* were located on the properties of 24 persons. Most of this work was performed in Windham county, where a total of 178 bushes were destroyed.

Blister rust surveys: (1) White pine areas of state - data suitably recorded on maps for each agent's use. (2) Strip line infection survey made in 1920. The pines on rod wide strips totaling 28 miles in length were examined - a total of 4002 pines were inspected and 3.1% found diseased. (3) Production, value and use of white pine and other woods - data summarized for entire state, and published in bulletin form. (4) Epidemiology survey of white pine and other forest types, *Ribes* and infection conditions made during 1926. Maps and summaries prepared at Boston Office.

Infection: General throughout the commercial pine range of state, being especially severe in northern Connecticut River Valley region - based on town units, the percent of diseased pine ranges from 1-30 percent of the total amount of pine - also, see strip line data under "Surveys". Considerable new infection occurred in unprotected areas during 1928.

Investigations: Demonstration control areas at Thetford and Fairlee, Vermont - preliminary reports submitted - no follow up work done. *Ribes* regrowth studies made by Merrill, and reported at 1927 annual conference. Blister rust damage study of merchantable pine made by Filler at Waterford, Vermont - report being prepared. During 1927, six quarter acre infection plots laid out by agents. Also, in cooperation with the extension forester, six permanent demonstration plots were established to show white pine thinning and protection. Seven additional demonstration plots in six towns were laid out in 1928.

Office records: Maps and card records showing pine location, control areas, plantations, and infection, are in good shape.

Future work: Complete initial *Ribes* eradication, 276,377 acres -(basis: pine acreage (pure and mixed) plus an additional one-fourth acreage for protection strips minus area cleared of *Ribes*.) In addition, there are 284,253 acres of other types restocking to pine, which may need protection - Re-examination of initial control areas, 153,745 acres, estimate at least 50%, or 62,805* acres, will need to be reworked - Systematic survey to eliminate *Ribes nigrum* from state - Study to determine effectiveness of control.

*Excludes 14,067 acres reworked since 1922.

MASSACHUSETTS

Policy: Cooperation with individuals - state scouts used to examine town areas and to denote sections requiring intensive control work, which will be done by pine owners, under the direction of state foremen.

Acreage of pine: Pure, 450,799 acres; mixed, 337,031 acres; pine restocking in types other than pine, 270,539 acres; total, 1,058,369 acres.

<u>Cooperation:</u>	<u>Period</u>	<u>No. Individuals</u>	<u>Individual Expenditures</u>	<u>No. Town Appropriations</u>	<u>Town Money Appropriated</u>
	1918-1921	81	\$5,886.22	4	\$1700.00
	1922-1928	11,488	53,404.59	0	0
	<u>Totals</u>	<u>11,569</u>	<u>\$59,290.81</u>	<u>4</u>	<u>\$1700.00</u>

<u>Ribes eradication:</u>	<u>Period</u>	<u>Acreage</u>	<u>Ribes Pulled (Wild & Cult.)</u>	<u>Total Cost</u>	<u>Cost Per Acre</u>
(Initial and	1918-1921	81,877	2,425,213	\$44,674.90	\$.546
re-eradication)	1922-1928	1,343,701	8,823,060	177,756.02	.132
	<u>Totals</u>	<u>1,425,578</u>	<u>11,248,273</u>	<u>\$224,430.92</u>	<u>\$.156</u>

Eradication costs based on total cost of owners labor, state scouts and foremen.

Cultivated Ribes destroyed: 1918-1921, 10,345 bushes; 1922-1928, 178,806 bushes; total for period 1918-1928, 189,151 bushes.

Compensation, 1922-1928: Number persons paid compensation - 252; total number bushes paid for - 17,617; total amount paid in reimbursement - \$5987.80.

Ribes re-eradication: The above acreage includes 59,472 acres reworked since 1922. This re-eradicated area represents over 16 percent of the total acreage reworked in New England and New York.

State forests: Initial control work has been completed on practically all pine areas in the state forests.

Plantations: Protection secured in conjunction with the general control program.

Nursery sanitation: All nurseries growing white pine for public sale were cleared of Ribes prior to 1925. During 1925 and 1926 a special survey was conducted to eradicate all Ribes nigrum from within one mile of all pine growing nurseries. In this work, a total of 217 Ribes nigrum and 319 flowering currants were destroyed. These bushes were owned by 155 persons, but claims were made by only ten persons for loss of 106 bushes. During 1927 and 1928, the protection zone for wild and cultivated Ribes, except nigrum, was increased from 900 to 1500 feet around nine of the main commercial nurseries, and a total of 4942 wild Ribes and 3345 cultivated bushes were destroyed. Fifty persons claimed \$647.15 for loss of 1400 cultivated Ribes. Spot pine infections were found in six nurseries during 1928, but no new outbreaks were located.

Ribes nigrum: A special regulation prohibits the possession of Ribes nigrum in the state. During 1928, Massachusetts began a black currant survey to systematically eliminate such bushes. This work was completed in 12 towns and 1371 black currants were destroyed, excluding 2199 Ribes nigrum eradicated in other Massachusetts towns in connection with the regular field work.

Blister rust surveys: Cultivated Ribes census throughout entire state in 1917 - data compiled and a summary report prepared - used as a basis for inspections and eradication of Ribes nigrum. During 1920, strip line infection survey was made - the pines on a rod wide strip totaling 4.4 miles in length were examined - a total of 871 pines were inspected and 5.7% were found infected - 9 plots, totaling 3 acres, were laid out adjacent to the strips; 27% of the 637 pines in these plots were diseased - epidemiology survey by agents during 1926 of white pine and other types, Ribes, and infection - maps and summaries prepared at Boston Office.

Infection: General, but spotted and light, especially in eastern and central parts of the state. In these sections, most of the infections are old ones caused by Ribes nigrum; eradication of most of these bushes in 1917 had a decided effect in checking spread of disease, as wild Ribes are localized in these sections. Also, see strip line data under "Blister Rust Surveys".

Investigations: Demonstration control areas established at Barre and Pembroke - no check study advisable. Pine infection study made by Root at Pembroke, also infection studies made by Pickler at Sandisfield, and by Hodgkins at Swanzey - reports submitted. Cutting out of cankers studies made by Martin at Ipswich, and by Hodgkins at Pembroke - published report by Martin. Damage plots laid out by agents in western Massachusetts - used for demonstration and educational purposes. Sample forest type map made of Duxbury, used as basis for control work. Study on spread of disease from skunk currant started by Clave during 1927 - report presented at annual conference showed only limited spread from such Ribes. During 1928, Clave conducted experiment to determine effectiveness of sodium chlorate in killing skunk currants - preliminary report given at annual conference.

Office: Records and maps for the most part in good shape - more such work needed by Roop and McNerney.

Future work: Complete initial eradication, 45,052 acres (Basis: total pine acreage (pure, mixed, and area of other types restocking to pine) plus one-third additional acreage for protection strips minus area cleared of Ribes). The area still in need of initial protection is probably about 200,000 acres rather than 45,000 as indicated. Re-examination of initial control areas totaling 1,366,106 acres, estimate 50 percent of this acreage will need intensive reworking. As 59,472 acres have already been re-eradicated of Ribes since 1922, only 623,561 acres will actually need to be reworked. Elimination of Ribes nigrum throughout state - completion of nursery sanitation - study of effectiveness of control - complete chemical eradication study.

RHODE ISLAND

Policy: All control work performed by 5 state scouts, as Ribes number less than one per acre and are very localized.

Acreage of pine: Pure, 13,779 acres; restocking of pine in types other than pine, 59,417 acres; total, 73,196 acres - also considerable acreage of potential pine land.

Cooperation: No cooperation solicited, except in 1918, 1923, and 1924, when eight individuals gave \$581.36 for conducting general control work in the state.

<u>Ribes eradication:</u>	<u>Period</u>	<u>Acreage</u>	<u>Ribes Pulled (Wild & Cult.)</u>	<u>Total Cost</u>	<u>Cost Per Acre</u>
(Initial and	1918-1921	103,261	85,493	\$16,761.55	\$.162
re-eradication)	1922-1928	180,331	121,251	13,811.74	.077
	Totals	283,592	206,744	\$30,573.29	\$.108

Eradication cost based on total cost of state scouts.

Cultivated Ribes destroyed: 1918-1921, 4251 bushes; 1922-1928, 7616 bushes; total for period 1918-1928, 12,067 bushes.

Compensation - 1922-1928: Number persons paid compensation - 7; total number bushes paid for - 94; total amount paid in reimbursement - \$35.85.

Ribes re-eradication: The above acreage includes 10,910 acres reworked since 1922.

State forests: The one state forest has been protected.

Plantations: All plantations in control areas have been protected, but those outside have not been worked - not much planting done in this state.

Nursery sanitation: Only a few ornamental pines are grown in the Rhode Island nurseries. Such nurseries and environs have been inspected by state men - no pine infection has ever been found in these nurseries. Only one nursery grows cultivated Ribes for sale.

Ribes nigrum: A state law prohibits the possession of such bushes in the state. A survey to locate Ribes nigrum was completed in two towns in 1927. These bushes were eradicated in 1928. During 1929, practically all the control

work will be limited to systematic eradication of *Ribes nigrum*.

Blister rust surveys: A rough survey of white pine areas in state was made by Sheals in 1920. This information has been used for control and educational purposes. During 1926, a cartographical survey was completed of white pine and other types, *Ribes* and infection conditions. - These data summarized at Boston Office. A survey of the production of white pine and other woods in the state during 1925 was made by Anderson, Report prepared and published in News Letter. During 1928, Hurford began a survey to map location of white pine and other forest types, and to estimate their contents. Only a good start has been made on this project.

Pine Infection: Few spots, mostly from cultivated black currants - many of the infections have been cut out.

Investigations: Study of *Ribes* regrowth and effectiveness of control made by Anderson, report prepared by Anderson and Fivaz.

Office: Records of control work in good shape.

Future work: Complete initial protection of pine areas and potential pine land, estimate 1000 acres needs to be worked. Re-examination of all control areas (283,592 acres) and eradication of *Ribes* in all likely sites such as; swamps, stream courses, fence rows, walls, cellarholes and roadways. This check work in likely sites will take a four man crew at least two or three seasons - elimination of *Ribes nigrum* from state - report on all control work in state - complete survey of forest types and an estimate of their contents.

CONNECTICUT

Policy: In Litchfield County, where pine and Ribes are more or less generally distributed, cooperation is conducted with individuals and towns, foremen and scouts being furnished by the state. Outside Litchfield County, Ribes are comparatively few and localized; consequently, the control work is limited to scouting performed by state men.

Acreage of pine: Pure, 73,426 acres; mixed, 124,345 acres; pine restocking in types other than pine, 47,873 acres; total, 245,644 acres.

<u>Cooperation:</u>	<u>Period</u>	<u>No. Individuals</u>	<u>Individual Expenditures</u>	<u>No. Town Appropriations</u>	<u>Town Money Appropriated</u>
	1918-1921	0	0	0	0
	1922-1928	275	\$7680.08	10	\$5201.42
	<u>Totals</u>	275	\$7680.08	10	\$5201.42

<u>Ribes eradication:</u>	<u>Period</u>	<u>Acreage</u>	<u>Ribes Pulled (Wild & Cult.)</u>	<u>Total Cost</u>	<u>Cost Per Acre</u>
(Initial and	1918-1921	13,470	125,271	\$6,962.11	\$.517
re-eradication)	1922-1928	171,824	1,452,982	44,701.06	.260
	<u>Totals</u>	185,294	1,578,253	\$51,663.17	\$.280

Eradication cost based on total cost of owners labor, state labor, scouts, and foremen.

Cultivated Ribes destroyed: 1918-1921, 8 bushes; 1922-1928, 6281 bushes; total for period 1918-1928, 6289 bushes.

Compensation, 1922-1928: None paid.

Ribes re-eradication: The above acreage includes 12,900 acres reworked since 1924.

State forests: The state forests contain very little pine - protection work has been conducted where necessary.

Plantations: The station forester has a good record of pine plantings, and these are gradually being inspected, even those outside the control areas.

Nursery sanitation: During the fall of 1927, 158 owners of nurseries were interviewed regarding blister rust control. Sixteen owners, desiring to snip pine out of New England, agreed to cooperate in maintaining official control areas around their nurseries. A preliminary Ribes survey of these areas showed 70 Ribes owners, possessing 1014 cultivated bushes, would permit the destruction of the plants without compensation; and that 27 owners, having 567 bushes were unwilling to cooperate. The attitudes of 28 additional owners of 342 bushes were not determined. As a result of the survey, control areas were established around eleven nurseries, and during 1928, 3962 acres were cleared of 60 wild Ribes, 93 Ribes nigrum, and 333 other cultivated bushes. The eradication work around these nurseries will be completed during the spring of 1929.

Ribes nigrum: At this session of the legislature, Connecticut is attempting to secure a law prohibiting the possession of Ribes nigrum in the state. No systematic work has been done to eliminate these bushes, but during 1928 such bushes were destroyed within a mile radius of each cooperating nursery, which maintained an official control area.

Blister rust surveys: During 1920 and 1921, all pine areas in the commercial pine range were mapped on U.S.G.S. sheets, and an estimate made of their contents - data used as a basis for control work and for educational purposes. Epidemiology survey during 1926 of white pine and other types, Ribes and infection conditions - data summarized at Boston Office.

Infection: General in northern Litchfield County - only spot infections, mostly old cankers, in remainder of state.

Investigations: Ribes regrowth and effectiveness of control study by Endersbee, report prepared - crew experiment by Riley, preliminary report submitted.

Office: Records and maps in excellent shape.

Future work: Complete initial eradication 134,661 acres (basis: total pine acreage (pure, mixed, and acreage of other types restocking to pine) plus one-fourth acreage for protection strips minus area cleared of Ribes.) Re-examination of initial control areas (172,394 acres), estimate 50% will need to be reworked. A total of 12,900 acres have been reworked since 1924. Complete crew experiment - Survey of Ribes nigrum and elimination of these bushes - Nursery sanitation measures applied to all nurseries growing white pine - Complete inspection of all plantations in state.

NEW YORK

Policy: Protection of white pine on state lands and on lands owned by individuals. State cooperates with such owners by furnishing, at state expense, foremen to supervise control work.

Acreage of pine: Pure, 642,780 acres; mixed, 463,022 acres; pine restocking in types other than pine, 250,834 acres; total, 1,358,636 acres. (Based on 1927 survey.)

<u>Cooperation:</u>	<u>Period</u>	<u>No. Individuals</u>	<u>Individual Expenditures</u>
	1918-1921	41	\$18,658.34
	1922-1928	2686	26,279.76
	Totals	2727	\$114,938.10

<u>Ribes eradication:</u>	<u>Period</u>	<u>Acreage</u>	<u>Ribes Pulled (Wild & Cult.)</u>	<u>Total Cost</u>	<u>Cost Per Acre</u>
	1918-1921	68,062	4,525,581	\$170,343.75	\$2.50
	1922-1928	283,501	8,081,386	288,265.73	1.02
	Totals	351,563	12,606,967	\$458,609.48	\$1.30

Eradication costs include total cost of owners labor, state labor, foremen, and scouts.

Cultivated Ribes destroyed: 1918-1921, 13,736 bushes; 1922-1928, 18,550 bushes; total for period 1918-1928, 32,286 bushes.

Compensation - 1922-1928: Number persons paid compensation - 221; total number bushes paid for - 2377; total amount paid in reimbursement - \$805.06.

Ribes re-eradication: The above acreage includes 10,395 acres reworked during 1928, and cleared of 216,828 wild and 824 cultivated Ribes at a cost of \$5035.30.

State forests: Practically all of the control work prior to 1922 was on state lands; however, since then the amount of work on private lands has greatly exceeded the state projects. Initial control work has been completed on most of state pine areas worth protecting, except on such new purchases as the Tongue Mountain tract.

Plantations: The New York State nurseries have distributed, up to and including 1928, 49,945,938 white pines for planting in the state. Many of these plantings have been protected, especially in the agents' districts, but in other parts of the state no such control work has been done, except that by Agent Baker in 5 counties in the northwestern part of the state. New York requires all prospective planters to sign an agreement, guaranteeing to eradicate all Ribes from pine planting sites.

Nursery sanitation: During the past several years, the state nurseries have been consistently protected. However, systematic sanitation work to protect the 300 commercial nurseries was not undertaken until 1928. Most of this work was performed in Wayne and Westchester counties. It soon became apparent that cultivated Ribes were extremely abundant in the vicinity of the various nurseries. As compensation had to be paid for such bushes destroyed, it was evident, the work would have to be limited. Therefore, it was restricted to general survey to determine and record Ribes conditions in the vicinity of the nurseries in these counties, and to the eradication of Ribes nigrum in such situations.

Ribes nigrum: New York has a state law prohibiting the possession of such bushes. A systematic survey to eradicate Ribes nigrum was started in 1928. This work was chiefly confined to control areas and to nursery growing sections, and resulted in 7939 black currants being destroyed, not including bushes eradicated in connection with the regular control work. In Westchester county alone, 3313 Ribes nigrum were uprooted, and the survey completed in all but six towns.

Blister rust surveys: Strip line infection survey made by Brooks in 1920 - The pines on rod wide strips, totalling 28.4 miles in length, were examined, a total of 12,297 pines were inspected, and 5.1 percent found diseased; 16 plots, totalling 15.1 acres, were laid out adjacent to the strips. 17.5% of the 14,455 pines in these plots were diseased. In 1922, Fivaz made a similar strip study near Warrensburg of 12.1 miles in length and found 21% of the 8139 pines infected. During 1920 and 1921, Amadon made survey of white pine in parts of Essex and Warren Counties - the pine areas have been designated on U.S.G.S. maps, but no summary has been made of acreage or contents of the stands - maps used as basis for control work. During 1927 and 1928, McIntyre had rough maps made of the pine and hardwoods types in several counties for use in eradication work. Cartographical survey made by agents and Corliss, during 1926 and 1927, of white pine and other forest types, Ribes, and infection conditions - maps and summaries prepared at Boston Office.

Infection: General and abundant in commercial white pine range of the state, spot infections in other parts, caused principally by infected stock or Ribes nigrum. In generally infected region, on a basis of town units, the percent of diseased pine ranges from 1-30 percent of the total amount of pine. Also, see strip line data under "Surveys".

Investigations: Selective Ribes eradication experiment at North Hudson - not completed - no report. Effectiveness of control study made by Fivaz - preliminary report only. Blister rust damage studies by York and Snell - published in Journal of Forestry. Ribes ecology studies by Littlefield and Fivaz - preliminary report given at annual conference 1927. Damage study of pine plantation at Schroon River - preliminary report prepared by Ford. During 1928, the pines were examined for infection in 30 plots (each approximately one acre in size) 15 of the plots being laid out in acres cleared of Ribes prior to 1925, and the other 15 in tracts not eradicated of such bushes in the same towns. The study showed that since the time of eradication, over 15 times as much infection has originated in the unprotected tracts, as in the protected areas.

Office: Records and maps in good shape.

Future work: Complete initial Ribes eradication on state and private lands, 1,041,084 acres (basis: pine acreage (pure and mixed) plus one-fourth additional acreage for protection strips - area cleared of Ribes.) In addition, there are 250,834 acres of other types restocking to pine that may need protection - Re-examination of 341,168 acres of initial control work, estimate 50% will need to be reworked - Elimination of Ribes nigrum throughout state - Adequate sanitation measures surrounding all nurseries growing white pine. Continuation of Ribes ecology study - Inspection of pine plantations and application of control measures.

NEW JERSEY

Policy: Temporary cooperative scouts employed during summer months to determine pine, Ribes, and infection conditions.

Acreage of white pine: From a forestry viewpoint, very little white pine in the state; however, it has been planted extensively as an ornamental, especially in the Red Bank and Morristown sections. In Passaic County, a light stocking (less than 20 percent) of native white pine is found in hardwood types in the Greenwood Lake section, on Bearfoot Mountain, and near West Milford. At the last place, there is almost a pure stand of white pine comprising several acres. Also, in Sussex County, a light stocking of white pine exists on Waywayonda Mountain (from Vernon north to the state line), Pochuck Mountain, Sparta Mountain, Kittating Mountain, and around Cranberry Lake. It is most abundant in the township of Montague. In Warren County, there is also a light stocking along the Delaware between Columbia and Manunka Chunk.

Cooperation and Ribes eradication: Many owners destroyed their Ribes nigrum, also there is an unwritten agreement between the New Jersey nurseries not to sell these bushes. Wild Ribes are known to exist in the northern part of the state, particularly on Waywayonda Mountain and near West Milford, where Ribes rotundifolium and americanum have been found. The location of the wild Ribes in relation to valuable pine areas is such that the destruction of these bushes does not seem urgent.

State forests: 6 forests, comprising 18,954 acres, apparently contain little white pine of commercial importance.

Plantations: About 10,000 acres have been planted; however, the white pine survey shows only an estimated total of 194,840 planted white pines, exclusive of 21,388 reported in nurseries. The largest white pine plantings are located in Gloucester, Morris, Cumberland, Ocean, and Somerset Counties. Smaller white pine plantings are found in the Counties of Monmouth, Warren, Burlington, and Sussex. There is one state nursery of about ten acres in size - no information as to sanitation measures.

Ribes nigrum: Survey of black currants made in Morris County, also in parts of Monmouth and Sussex; 102 plantations of black currants were found in Morris County, 19 in Monmouth, 10 in Sussex, 1 in Warren, and 1 in Passaic Counties. Black currants were found in but one nursery in the area scouted.

Investigations: General scouting to locate pine, Ribes, and infection conducted during summer months by one or two cooperative scouts - state wide survey of forest types, by towns, made by Hirt during 1927 - this detailed data have not as yet been summarized.

Infection: First found in New Jersey in 1911 on pines at the Newark watershed near Charlotteburg. Since then, infection has been found somewhere in the state every year with exceptions of 1912, 1914, 1915, and 1923. Scouting in 1927 showed the disease more generally prevalent than ever before, being found on Ribes in 21 localities in seven counties. No pine infection has been reported since 1918.

Future work: Application of adequate nursery sanitation measures - complete survey of Ribes nigrum and eradication of such bushes - eradication of all Ribes within at least 900 feet of pine plantations and ornamental pine of value - additional scouting in northern section of state to determine, in more detail, pine, Ribes, and infection conditions - adequate records and maps to show location of pine plantations, Ribes nigrum, native pine, infection, etc. - general educational work to keep public informed of the disease and its control.

PENNSYLVANIA

Policy: At present, the work is limited to cooperative scouting for pine, Ribes, and infection during summer months by two or three men.

Acreage of white pine: Pure, 91,897 acres; Mixed, 126,101 acres; pine re-stocking in types other than white pine, 157,630 acres; Total, 375,628 acres. In addition, there is a vast unestimated acreage containing less than 20 percent pine stocking in mixture with other species. These figures are based on the 1927 cartographical survey.

Cooperation and Ribes eradication: No known control work was performed in state prior to 1928. The greatly increased spread of the disease during 1927, resulted in a request from the state officials for two demonstrations of control measures by federal specialists for the district foresters and rangers. One demonstration, attended by 20 men, was held at Sinnemahoning and the other, with 12 men present, was conducted at Damascus. Preliminary arrangements were also made for protecting the white pines on the National Forest at Hearts Content. Control work was also conducted around pine plantings on the Fox Estate in Clarion County. Several other owners contemplate Ribes eradication work on their properties during 1929.

Public forests: In 1926, the 21 state forests totalled 1,131,783 acres. There are also two national forests, the Allegheny and the Tobyhanna - no definite information is available as to the amount of pine on these forests. According to Mr. Bishop, there is very little pine on the Allegheny National Forest.

Plantations: Six state nurseries have a capacity several million trees - Up to 1927, the state nurseries had distributed about sixteen million white pines for planting purposes. Approximately 20,194 acres have been planted to white pines.

Nursery sanitation: - No data.

Ribes nigrum: Cultivated Ribes survey made in Wayne County in 1925 - 279 black currants being found. General scouting and the school campaign show Ribes nigrum planted in most sections of the state, but these bushes are apparently not very numerous.

Blister rust surveys and infection: The cultivated Ribes survey in Wayne County during 1925, resulted in the location of 2051 cultivated Ribes. Of these, 279 were black currants, 1496 prickly gooseberries, 250 cultivated gooseberries, and 26 ornamental Ribes - Sixty two gardens contained black currants - Blister rust was found at Calicoon on pines and black currants, at Rileysville on black currants, at Damascus on pines and wild Ribes, and at Laurella on black currants. The infection at Laurella is a new location, the rust being found previous years in the other places.

During 1926, scouting was performed in four northern counties, the rust being found on Ribes nigrum (2 bushes in each case) in the counties of Monroe, Pike, Wyoming, and Lackawana. In Brooklyn, infected wild Ribes were located.

During 1927, a cooperative school survey to locate the rust was made in 57 counties - 14,000 packets (each containing instructions to the teacher, a sheet of information, colored illustrations, ten small envelopes for specimens, a return envelope, and a report form) were sent to each school outside Pittsburg and Philadelphia. In the 53 counties reporting; returns were received from 1716 schools. These schools reported that 13,061 gardens had been examined, and 253 of these schools sent in 465 envelopes containing specimens infected with blister rust. The rust findings are distributed over 37 counties, and the area so affected extends nearly to the Ohio border on the west, on the south to the Maryland line. Since the number of envelopes submitted was 7123, the percentage containing blister rust was 6.5%; similarly, the percentage of schools reporting rust was 14.7%. Additional reports were received during 1928 from 50 schools in 7 different counties covering the examination of 365 gardens. These additional 1928 reports contained only one specimen of blister rust.

General scouting in 1927 recorded the presence of the rust in five additional counties (Bucks, Monroe, Luzerne, Columbia, and Clarion), all of these, except Monroe, are new counties for the rust. At Clarion, a stand of pine reproduction was found to be quite heavily infected with young cankers.

In 1928, a somewhat similar infection survey was conducted by utilizing the fire warden personnel (4100 men) of the Department of Forests and Waters. Reports were received from 171 or 4 percent of the 4100 wardens, scattered over 50 of the 53 counties in the state. These men examined 3550 Ribes in 501 locations. A total of 91 wardens submitted 269 Ribes specimens, 14 of which were infected with the rust.

A check was also made during 1928 in 28 of the 37 counties where infected Ribes were located by the 1927 school survey. In the course of this work, a scout visited the vicinity of 144 schools which reported the rust in 1927. As a result, the disease was found again near 49 of these schools. The scout examined the Ribes in 204 gardens and found infected bushes in 64.

During 1928, some additional scouting was also done by federal and state men. As a result of all surveys and scout work in 1927 and 1928,

the blister rust has been found on Ribes in 43 counties, and on pine infections in nine locations, scattered over six counties as follows: Cameron, 1; Clarion, 1; Clinton, 1; Lycoming, 1; Potter, 2; Wayne, 3. In three areas the damage to young pine has been severe, while in others, the rust is in its initial stage.

Suggestions For Blister Rust Control Work in Pennsylvania.

1. Obtain legislation prohibiting possession of Ribes nigrum in state - systematic eradication of these bushes at least in the commercial pine regions.
2. Apply adequate nursery sanitation measures to guarantee production of disease-free white pines in state and commercial nurseries. Protect the white pines in each of such nurseries by eradication of all Ribes nigrum within a radius of one mile and the destruction of all other species of wild and cultivated Ribes within 1500 feet. The eradication of the wild bushes can be most effectively performed during the spring months, before the other vegetation becomes abundant. Such work should be performed by experienced men working in strip formation. Each person ordering white pine nursery stock ought to be required to sign a statement agreeing to eradicate all Ribes in the area to be planted and within an adequate protection strip. In addition, it would be desirable to have a reminder tag attached to each white pine shipment, warning the owner to eradicate the nearby Ribes prior to planting the trees.
3. Make detailed pre-eradication survey of pine and Ribes conditions in pine towns, as determined by Hirt's forest type survey made during 1927. All pine areas to be designated on U.S.G.S. maps, and detailed information secured for each area as to estimated acreage, Ribes conditions, owner's attitude towards cooperation, etc. Each pine unit should be numbered on the map, and a card correspondingly numbered should summarize the detailed data for the particular lot. In combination with this work, scouting should be performed for infection on Ribes and pine. The mapping plan used by Riley in Connecticut would apply very well to Pennsylvania conditions.
4. Application of timely and adequate protection of all pine areas worth protecting (both native and planted trees) on publicly owned forests. All known lightly infected areas should be protected first. The Cock State Forest is especially in need of protection as it contains considerable pine. Ribes and pine infection have also been found on this Forest. (The pine plantings at Sinnemahoning would not ordinarily be considered worth protecting because of the abundance of Ribes and infection, the difficulty and high cost of effectively destroying such bushes under adverse conditions, and the suppression of the pines by the hardwoods. If it is true that only a few pine infection centers exist in the State,

it might be advisable to destroy such an infected plantation to prevent long distance spread of the disease from pine to Ribes. However, before taking such action, more extensive and intensive scouting is needed to determine if pine infection has not already become generally established. The disease has been present on pine in Pennsylvania since 1919, so probably it is much more abundant and generally distributed than present information indicates. Under such conditions, I doubt very much the practicability of such eradication of infected pines.)

5. A blister rust specialist, working under state direction, should be appointed to effectively train the district foresters and rangers, and to work with these men in the establishment of blister rust control in their districts. In the commercial white pine range, each district forester should be made responsible for all blister rust control activities in his district, including Ribes eradication work on individually owned lands. A program of systematic control should be developed for each district covering all educational, service, and supervisory activities. When practicable, the yearly control work should be localized to the pine sections in a definite group of towns, rather than on the basis of scattered jobs over the entire district. It also appears advisable to protect the pines in the infected towns first. The pre-eradication survey and black currant eradication work, mentioned under Items 1 and 3, respectively, could probably be performed by the district foresters and their assistants, with the advice and assistance of the blister rust specialist. These district men would also secure the cooperation of individual pine owners in control work, and supervise the crews pulling the bushes to make sure effective work is performed.
6. Cooperation with Federal Forest Service during spring of 1929 in protecting white pines at Hearts Content tract. Office of Blister Rust Control to make preliminary survey of area and furnish an experienced foreman to direct the control work of the Forest Service men.

MICHIGAN

Policy: Since 1927, one permanent agent has been cooperatively employed to determine pine, Ribes, and infection conditions, and to organize and supervise control projects. Due to lack of funds, no control work was conducted in the state prior to 1928. During that year, Ribes eradication work was begun in one town, by means of a town appropriation and some individual cooperation. The 1929 state legislature will consider a bill to establish a definite blister rust control law, including adequate state appropriations for control work.

Pine acreage: Most of the white pine in Michigan is located in the upper half of the lower peninsula. The cartographical survey of 1928 showed pine conditions as follows: Pure, 28,052 acres; mixed, 534,611 acres; pine restocking in types other than white pine, 28,800 acres; total, 641,463 acres. In addition, there is a considerable acreage of mixed growth, which contains less than 20 percent of pine stocking. (Information complete for entire state except Cheboygan County and six additional towns.)

Cooperation and Ribes eradication: During 1928, a total of 1400 acres in the town of Tuscarora were cleared of 62,779 wild Ribes and 187 cultivated bushes at a cost of \$217.72 to the state, and \$485.60 to the town. In addition, 100 acres were worked in cooperation with 8 individual owners; 9 wild Ribes and 76 cultivated bushes being destroyed at a cost of \$30.00 to individuals and \$6.00 to the state.

Public forests: Seventy eight state forests contain 333,000 acres; two National Forests comprise 127,000 acres - no information is available as to amount of white pine in these tracts.

Plantations: Up to 1925, about 25,400 acres had been planted, but no information is available as to how much of this is white pine. The cartographical survey of 1928 secured partial information on white pine plantings. These data showed 4846 acres had been planted to white pine.

Nursery sanitation: Yearly inspections made of pines and Ribes in nurseries. Inspections, during 1927, showed need for nursery sanitation measures. Only one state nursery of 15 acres.

Ribes nigrum: A black currant law was passed in 1928 prohibiting possession of *Ribes nigrum* in counties where infection has been found. During 1928, a sample black currant survey was conducted in Sheridan Township, Clare County, for the purpose of estimating the time and expense necessary to carry on a general state wide black currant eradication program. The project started as a black currant survey, but developed into one covering all cultivated *Ribes*. Out of a total of 213 farms in the township, 80 had cultivated bushes as follows: 424 red currants, 215 gooseberries, 121 flowering currants, and 90 black currants - total, 850 bushes. It took one man five days to make the survey. He traveled 168 miles, interviewed 210 persons at a total cost of \$55.76.

Blister rust surveys and infection: General scouting for infection has been conducted during the past several summers; however, not until 1927 was the disease found to be general on *Ribes nigrum* in the southern peninsula - disease first found in 1917 on imported pines in Oakland County nursery - more infections found in Oakland County during 1918, 1919, and 1922 - infection located in Kent County in western part of state during 1922 and 1923 - no infection found since then until 1927. Most of the infection is primary and occurred on imported seedlings. During 1927, *Ribes* infections were found in 56 locations in 18 counties - scouting of about 7,000 acres of pine in St. Clair, Sanilac, Macomb, Clare and Midland Counties did not reveal any infection.

Infected white pines were found for the first time in Michigan, during 1928, at Indian River, Tuscarora Township, Cheboygan County. The infected trees numbered about ten. No other diseased pine were located in 1928.

A survey to determine the extent of *Ribes* infection was conducted in cooperation with the schools during 1928. As a result, infected *Ribes* were located for the first time in five counties in the upper peninsula. In addition, the survey revealed infected *Ribes* in nine counties in the lower peninsula: five of this number being new situations and four where infection had been located in 1927. General scouting by the blister rust agent showed *Ribes* infection in three additional counties in the southern peninsula. Thus, the disease has been found on *Ribes* in 31 counties in Michigan, and on pine in Cheboygan County.

The cartographical survey to determine the location of pine, *Ribes*, and infection was completed by Agents Corliss and Hirt during 1928, except in Cheboygan County.

Future work: Establish definite control program with adequate personnel - application of adequate nursery sanitation measures - complete eradication of *Ribes nigrum* in state - follow-up survey to inspect and map pine areas as determined by cartographical survey - general scouting to determine infection conditions - protection of all pine plantations - initial eradication of *Ribes*, in cooperation with towns and individuals, to protect all native pine stands.

WISCONSIN

Policy: Prior to 1924, the state conducted the control work, eradicating infected pines and nearby Ribes, with some assistance from pine owners, who in many cases aided in pulling the bushes on their properties. Due to lack of funds, no control work was conducted by the state during the period 1924 to 1926, inclusive. In 1927 and 1928, a small amount of state work in Ribes eradication was performed. A state leader has been continually employed in Wisconsin to conduct certain experiments, to scout for the disease, to supervise control work, and to maintain public interest in white pine and blister rust control, pending adequate appropriations for applying general control measures.

Acreage of pine: Pure, 11,127 acres; mixed, 109,756 acres; total, 120,883[✓] acres. There is also a considerable acreage of mixed growth containing white pine stocking of less than 20 percent. Very little restocking of white pine is occurring in any of the types, due in part to grazing, fire, and settlement. Of the total pure pine, 8092 acres are in the three counties of Shawano, Oneida, and Vilas. Native white pine (pure and mixed) is found in 33 counties, pure stands being present in only nine. Nineteen additional counties have pine plantations only.

Cooperation: During 1920-1923, 112 individuals expended \$2855.24. This amount includes some money spent by the Indian Service and Conservation Commission. In 1926, the Indian Service had its men eradicate the Ribes from 250 acres, and during 1927, one owner re-eradicated Ribes on his property of 50 acres. In 1928, 5 owners expended a total of \$21.00 assisting in control work, and one additional owner, working alone, cleared 7 acres of Ribes.

Ribes eradication: 1918-1923, 28,299 acres eradicated of 1,997,338 wild Ribes at a cost of \$17,139.98, or 60.6 cents per acre. Ribes averaged 70.6 bushes per acre. Only 19 cultivated bushes were destroyed. No control work was performed in 1924 and 1925. In 1926, no control work was done except by the Indian Service at Keshina, where 150 acres were reworked and an additional 100 acres covered for the first time. During 1927, the state cleared 250 acres of 42,226 wild Ribes at a wage cost of \$653.60. One pine owner also re-examined 50 acres of his property for Ribes. In 1928, the state conducted control work on the properties of 5 individual owners. A total of 79,861 wild Ribes were cleared from 347 acres at a state cost of \$979.35. Also, the owners expended \$21.00 on this work and the Government paid \$45.00 toward the cost of a foreman. In addition one owner, working without supervision, cleared 7 acres of 1400 Ribes.

Public forests: Completed control work at Interstate Park, also on most of the pine lands of the Indian Reservation near Keshina - no other data available. The state owns 173,000 acres of state forests, which apparently do not contain much white pine.

Plantations: Most of the planting has been done during the last five years - According to the 1927 cartographical survey, 1262 acres have been planted to white pine in 33 counties. No information available as to protection of these plantations.

Nursery sanitation: In 1925, the state had one small nursery; however, the state output of seedlings has been greatly increased since that time. The pines and Ribes in private nurseries have been inspected annually, but no infection has been found - no information available as to other nursery sanitation measures.

Ribes nigrum: No black currant law or systematic effort to eradicate such Ribes.

Blister rust surveys and investigations: For several years, Ninman with some assistance, has done considerable scouting throughout the state, and has roughly marked on maps the location of many pine areas and infection. During 1922-1928, experiments in Ribes eradication and ecology have been conducted at Eau Galle. The field data have been summarized, and a preliminary report submitted. During 1927, Ninman secured data on forest types for the entire state. This information has been summarized at the Boston Office, and will be used in connection with the epidemiology study.

Infection: First discovered on pine in Polk County in 1916 - has been found since on scattered areas in the counties of St. Croix, Polk, Barron, Dunn, Pepin, Washburn, Rusk, and Eau Claire in the west central part of the state, and in Marathon and Shawano Counties in the east central portion. As the infected pines have been cut when found, no large pine infection centers are known to exist; however, it is expected that spot infections will be located from time to time.

Future work: Insure clean planting stock, by adequate nursery sanitation - protection of all pine plantations - eradication of all Ribes nigrum - complete initial eradication of Ribes, to protect native stands, at least 132,653 acres (basis: pine acreage (pure and mixed) plus additional 1/3 acreage for protection strips minus acreage cleared of Ribes) - re-examination of present control areas containing 28,653 acres, estimate all this acreage will need to be reworked because of abundance of Ribes found originally - complete Eau Galle experiment and prepare final report - extensive scouting to determine present status of disease - preparation of a detailed state map showing location of pine areas, infections, etc.

MINNESOTA

Policy: Blister rust work limited almost entirely to nursery inspection and to cooperative scouting during summer months: for pine and infection by one or two temporary employees. During the 1929 session of the legislature a blister rust control bill has been introduced. If this measure is approved, it will be possible to organize the Minnesota work on a basis comparable to that in the other states.

Pine acreage: Pure, 173,092 acres; mixed, 266,812 acres; pine restocking in types other than white pine, 170,524 acres; total, 610,428 acres. There is also a considerable acreage of mixed growth, which contains less than 20 percent of pine stocking. The natural pine range in Minnesota is north of a line drawn from southern Washington County to the southwestern corner of Kittson County in the extreme northwestern part of the state.

Cooperation: During 1921 and 1922, eleven individuals expended \$154.30 on control work.

Ribes eradication: During 1918 to 1923, inclusive, 4981 acres were cleared of 407,278 wild Ribes at a cost of \$14,180.17, or \$2.85 per acre - Ribes averaged 81.8 bushes per acre. Only 118 cultivated bushes have been eradicated. No control work performed since 1923.

Public forests: The National Forests in Minnesota during 1925 comprised 1,047,941 acres, while state forests had an acreage of 350,000 acres. Considerable white pine, mostly of merchantable size, is known to exist on the National Forests. No protection work has been done on these public forests. During 1917 to 1920, Ribes were eradicated from the Interstate Park.

Plantations: According to Forestry Almanac, up to 1927, a total of 375,000 trees have been planted on farm forests and as demonstration projects. No record as to how many of these trees were white pines.

Nursery sanitation: Yearly inspection made of Ribes and pines in state and private nurseries - no information as to other protective measures.

Ribes nigrum: No action taken regarding eradication of this species - many patches inspected for infection.

Blister rust investigations: 21 permanent pine infection plots established, by state men, in older infection areas to study development of disease. An examination of 2211 pines in these plots during 1927 showed 9.3 percent were infected. Also, 21 Ribes regrowth plots - summary of conditions in these plots given in state annual report for 1927. Control measures by local eradication of Ribes in 1918 and 1919 were effective in controlling pine infections. The Ribes regrowth, however, was such as to warrant re-eradication five years after the original work. Wild Ribes are widely distributed wherever pine occurs. Ribes cynosbati is most prevalent and very susceptible to the rust. Considerable scouting for pine and infection has been performed by Lindgren; this work is also reported in 1927 annual report. During 1927 and 1928, Hirt completed a survey of forest types in the state, as a basis for the epidemiology study. In 1928, the Ribes return plots and the pine infection plots were rechecked.

Infection: Blister rust found in eighteen counties; occurring on nursery stock in different places in the southern part of state almost to Iowa line, as far south as Olmsted and Martin Counties. On native pine and Ribes, the farthest south infections are found in Washington County. The rust is present in practically every county along the Wisconsin line from Washington County north to Lake County, north of Lake Superior. The farthest west infection is Morrison County, and the farthest north is northern St. Louis County (at Tower). Pine infection (on native pines) has been found as far north as Two Harbors in Lake County, as far west as Crow Wing County, and as far south as Washington County. In older infection areas, such as Rush Lake and Stanchfield, a large portion of the reproduction and the branches of older trees are being killed. The rust is spreading north and west, not at an alarming rate, but surely and steadily. During 1928, infection scouting was conducted in the principal white pine stands in 14 counties in the northern part of the state. As a result, new infections were found on Ribes in 6 towns in 6 counties, and on pine in the town of Duluth, St. Louis County. In this town, 65 new pine infections and 222 black currant infections were located. The number of new Ribes infections in the other five counties varied from 1 to 18, the maximum number being in the town of Two River, Lake County.

Future work: Establishment of definite control program based on adequate state law, appropriation, and personnel - application of adequate nursery sanitation measures to insure clean planting stock - outlawing of Ribes nigrum, and complete eradication of these bushes, especially in natural pine range - continuation of scouting to determine status of rust - conduct follow-up survey to inspect and map pine areas as determined by cartographical survey - application of control measures, especially in stands of young pine growth and re-eradication of early control areas, 4981 acres - continuation of studies on pine infection and Ribes regrowth - educational and service activities conducted in cooperation with forestry officials and Extension Service.

SPECIAL SUMMARIES OF CONTROL ACTIVITIES
IN NEW ENGLAND AND NEW YORK DURING PERIOD 1922-1928, INCLUSIVE.

SUMMARY OF EDUCATIONAL AND SERVICE WORK PERFORMED BY THE
BLISTER RUST CONTROL AGENTS IN NEW ENGLAND AND NEW YORK
DURING THE PERIOD JULY 1, 1922 to DECEMBER 31, 1928.
BASED ON YEARLY TOTALS FOR ALL STATES.

	<u>EDUCATION</u>							<u>Totals</u>
	July-Dec. <u>1922</u>	<u>1923</u>	<u>1924</u>	<u>1925</u>	<u>1926</u>	<u>1927</u>	<u>1928</u>	
Meetings addressed.....	251	722	707	627	490	467	363	3,627
Attendance.....	29,163	32,649	47,071	45,522	33,082	34,690	28,178	243,355
Field Dem. meetings.....	335	834	792	418	210	148	159	2,896
Attendance.....	1,732	6,442	4,050	2,912	5,018	2,646	2,809	25,609
Displays placed.....	374	582	647	680	624	647	492	4,046
Publications distributed.....	35,067	51,308	55,696	68,818	76,697	88,840	62,708	439,134
Geographed Articles distributed.....	No Record Prior to 1928.....						14,953	14,953
Items published.....	313	1,203	1,269	1,294	1,202	1,219	1,109	7,609
Posters and signs (Est) placed.....	2,500	6,499	13,868*	8,894	8,056	7,041	7,268	54,126

<u>SERVICE</u>								
Initial interviews....	6,227	14,724	15,984	13,819	12,153	13,120	15,644	91,671
Follow-up calls.....	1,924	5,555	6,804	7,380	7,309	8,228	8,625	45,825
Individuals instructed in Disease and Damage	1,027	2,688	3,922	6,833	7,206	7,761	5,673	35,110
Individuals instructed in Control Methods.....	513	1,586	2,276	4,336	4,353	5,341	3,279	21,684

*Includes 4315 posters mailed by the Boston Office to post offices and railroad stations in the agent districts of New England.

TOWN AND INDIVIDUAL COOPERATION IN RIBES ERADICATION WORK IN
NEW ENGLAND AND NEW YORK DURING THE PERIOD 1922-1928, INCLUSIVE.

(By Years)

Year	Town Cooperation		Individual Cooperation		
	No. Towns Appropriating	Amount Expended	No. Individuals Cooperating Cult. Ribes Erad. Only	Wild & Cult. Ribes Erad.	Amount Spent by Individuals
1922	59	\$ 16,150.39	-	971	\$28,783.42
1923	122	40,150.59	698	1,968	40,969.47
1924	147	47,822.14	1,714	3,059	45,698.43
1925	132	40,351.31	958	3,069	39,720.06
1926	123	41,223.95	741	3,283	44,172.88*
1927	125	38,299.74	894	3,537	49,040.81
1928	145	39,038.73	991	3,390	54,667.68
Totals	853	\$263,036.85	5,996	19,277	\$303,052.75

(By States)

State	Town Cooperation		Individual Cooperation		
	No. Towns Appropriating	Amount Expended	No. Individuals Cooperating Cult. Ribes Erad. Only	Wild & Cult. Ribes Erad.	Amount Spent by Individuals
Maine	291	\$48,044.40	545	8,310	\$61,630.36
N. H.	543	209,391.83	-	446	31,304.64
Vt.	9	471.34	136	1,351	49,057.76*
Mass.	-	-	5,159	6,329	53,404.59
R. I.	-	-	34	2	31.36
Conn.	10	5,129.28	62	213	7,680.08
N. Y.	-	-	60	2,626	99,943.96
Totals	853	\$263,036.85	5,996	19,277	\$303,052.75

*Individuals in Vermont spent an additional \$82.00 for cultivated Ribes compensation.

SUMMARY OF RIBES ERADICATION IN NEW ENGLAND AND NEW YORK
DURING PERIOD 1922-1928, INCLUSIVE.

(By Years)

Year	No. Acres Cleared Of Ribes	Ribes Destroyed		Cost to					Per Acre	
		Wild	Cult.	Indiv.	Towns	State	Govt.	Total	Cost	Ribes
1922	476621	4849812	16061	28783.42	16150.39	48683.66	3200.90	96818.37	.20	10.7
1923	892639	7969917	55074	40969.47	40150.59	76951.28	2812.53	160883.87	.18	9.0
1924	1008042	9446271	73858	45698.43	47822.14	71682.56	3972.39	169175.52	.167	9.4
1925	834428	729670	59458	39720.06	40351.31	56251.26	2169.23	138491.86	.166	8.7
1926	814439	8838000	51471	44172.88	41223.95	60292.28	2693.80	148382.91	.182	10.8
1927	894501	8032574	48738	49040.81	38299.74	62552.15	3409.71	153302.41	.171	8.9
1928	879812	6677961	58223	54667.68	39038.73	60988.80	3311.52	158006.73	.18	7.6
Tot.	5800482	53131205	362883	303052.75	263036.85	437401.99	21570.08	1025061.67	.177	9.2

(By States)

States	No. Acres Cleared of Ribes	Ribes Destroyed		Cost to					Per Acre	
		Wild	Cult.	Indiv.	Towns	States	Govt.	Total	Cost	Ribes
Maine	1971551	12519551	78988	61630.36	48044.40	9723.96	1769.07	137088.79	.070	6.4
N.H.	1699740	20666097	67250	31304.64	209391.83	64381.29	-	305077.76	.179	12.2
Vt.	149834	1678331	5192	49057.76	471.34	8831.47	-	58360.57	.390	11.2
Mass.	1343701	8644254	178806	53404.59	-	124351.43	-	177756.02	.132	6.4
R.I.	180331	113435	7816	31.36	-	12399.62	1380.76	13811.74	.077	0.6
Conn.	171824	1446701	6281	7680.08	5129.28	29407.45	2484.25	44701.06	.26	8.4
N.Y.	283501	8062836	18550	99943.96	-	188306.77	15.00	288265.73	1.02	28.4
Tot.	5800482	53131205	362883	303052.75	263036.85	437401.99	21570.08	1025061.67	.177	9.2

**SUMMARY OF RIBES ERADICATION WORK IN COOPERATION WITH INDIVIDUALS
IN NEW ENGLAND AND NEW YORK DURING PERIOD 1922-1928, INCLUSIVE.**

(By Years)

Year	No. Acres Cleared of Ribes	Ribes Destroyed		Cost to					Per Acre	
		Wild	Cult.	Indiv.	Towns	State	Govt.	Total	Cost	Ribes
1922	93828	2886282	8251	28035.13	820.78	10769.74	-	39625.65	.422	30.8
1923	174875	3954508	31338	40969.47	6910.47	16356.29	-	64236.23	.367	22.6
1924	205084	4235627	37532	44622.07	8000.65	18263.02	-	70885.74	.345	20.6
1925	209831	3567024	44811	39720.06	7089.87	21301.74	16.67	68128.34	.325	17.0
1926	241686	5485072	36075	44172.88	6747.56	24909.27	264.90	76094.61	.315	22.7
1927	291611	4993488	34066	49011.06	8375.41	28532.54	-	85939.01	.295	17.0
1928	323218	4027921	37104	54667.68	8089.87	30180.65	315.88	93254.08	.289	12.5
Tot.	1540133	29149922	229177	301198.35	46034.61	150333.25	597.45	498163.66	.323	18.9

(By States)

State	No. Acres Cleared of Ribes	Ribes Destroyed		Cost to					Per Acre	
		Wild	Cult.	Indiv.	Towns	State	Govt.	Total	Cost	Ribes
Maine	250506	12289296	77532	61630.36	45134.27	64.17	16.67	106845.47	.426	49.1
N.H.	116347	2889133	8222	31304.64	429.00	8300.14	-	40033.78	.344	24.8
Vt.	146711	1644077	5192	49057.76	471.34	7118.37	-	56647.47	.386	11.2
Mass.	738516	6390877	119469	53404.59	-	52037.85	-	105442.44	.143	8.7
R. I.	540	2175	1000	31.36	-	94.72	-	126.08	.23	4.0
Conn.	44963	280539	2830	5825.68	-	4239.15	565.78	10630.61	.236	6.2
N. Y.	242550	5653825	14932	99943.96	-	78478.85	15.00	178437.81	.735	23.3
Tot.	1540133	29149922	229177	301198.35	46034.61	150333.25	597.45	498163.66	.323	18.9

SUMMARY OF RIBES ERADICATION WORK IN COOPERATION WITH TOWNS
IN NEW ENGLAND DURING THE PERIOD 1922-1928, INCLUSIVE.

(By Years)

Year	No. Acres Cleared of Ribes	Ribes Destroyed		Cost			Per Acre	
		Wild	Cult.	Towns	State	Total	Cost	Ribes
1922	156,045	1,218,793	7,551	\$16,077.90*	\$6064.96	\$22142.86*	\$.142	7.8
1923	251,821	3,058,288	20,718	33,240.12	14485.22	47725.34	.189	12.1
1924	326,341	3,991,645	16,071	40,897.85**	14878.27	55776.12**	.169	12.2
1925	251,669	2,983,216	6,118	33,075.04	8271.20	41346.24	.164	11.8
1926	208,346	2,896,113	3,086	34,476.39	10583.68	45060.07	.216	13.4
1927	220,576	2,447,492	2,572	29,924.33	11416.16	41340.49	.187	11.1
1928	218,986	1,972,684	6,013	30,948.86	8043.37	38992.23	.178	9.1
Tot.	1,633,784	18,568,231	62,129	218,640.49	73742.86	292383.35	.179	11.4

*Includes \$748.29 raised by individuals in Connecticut.
 ** " 1076.36 " " " " "

(By States)

State	No. Acres Cleared of Ribes	Ribes Destroyed		Cost to			Per Acre	
		Wild	Cult.	Towns	State	Total	Cost	Ribes
Maine	4,438	116,554	933	\$ 2723.73	-	\$2723.73	.614	26.3
N.H.	1,578,788	17,557,993	58,462	208962.83	54157.76	263120.59	.167	11.1
Conn.	50,558	893,684	2,734	6953.93*	19585.10	26539.03	.525	17.7
Tot.	1,633,784	18,568,231	62,129	\$218640.49	73742.86	292383.35	.179	11.4

*Includes \$1824.65 raised by individuals.

SUMMARY OF STATE SCOUT WORK ON INDIVIDUALS' LANDS
IN NEW ENGLAND DURING PERIOD 1922-1928, INCLUSIVE.

(By Years)

Year	No. Acres Cleared of Ribes	Ribes Destroyed		Cost			Per Acre	
		Wild	Cult.	States	Govt.	Total	Cost	Ribes
1922	218,736	294,023	259	\$5178.51	\$ 3200.90	\$8379.41	.039	1.3
1923	457,209	233,169	2999	12032.26	2812.53	14844.79	.033	0.5
1924	460,739	131,233	20143	12076.07	3972.39	16048.46	.035	0.3
1925	366,763	476,012	8440	17217.42*	2152.56	19369.98*	.053	1.2
1926	346,010	106,194	11620	11257.44	2428.90	13686.34	.039	0.31
1927	368,161	126,354	8575	10398.61**	3409.71	13808.32**	.037	0.34
1928	318,502	76,756	10766	12319.26	2678.39	14997.65	.048	0.24
Tot.	2,536,120	1,443,741	62802	80479.57	\$20655.38	\$101134.95	.04	0.57

(By States)

State	No. Acres Cleared of Ribes	Ribes Destroyed		Cost to			Per Acre	
		Wild	Cult.	State	Govt.	Total	Cost	Ribes
Maine	1,716,537	112,102	397	\$9820.26*	\$17673.40	\$ 27493.66	.016	0.06
Mass.	569,003	959,725	55023	53263.12	-	53263.12	.094	1.12
R.I.	179,010	105,034	6746	12180.90	1380.76	13561.66	.076	0.6
Conn.	71,570	266,880	654	5215.29**	1601.22	6816.51	.095	3.7
Tot.	2,536,120	1,443,741	62802	\$80,479.57	\$20655.38	\$101134.95	.04	0.57

*Includes \$186.40 town money expended in Maine during 1925.

**Includes \$29.75 individual money expended in Connecticut during 1927.

No such work performed in New York.

In addition to the above, 70 acres were cleared of 1599 wild and 144 cultivated Ribes at a cost of \$25.93 in the application of regulatory measures in Maine during 1927 and 1928.

SUMMARY OF RIBES ERADICATION WORK ON PUBLIC LANDS IN NEW ENGLAND
AND NEW YORK DURING PERIOD 1922-1928, INCLUSIVE.

(By Years)

Year	No. Acres Cleared of Ribes	Ribes Destroyed		Total Cost	Per Acre	
		Wild	Cult.		Cost	Ribes
1922	8,012	450,714	-	\$ 26,670.45	\$3.33	56.3
1923	8,734	723,952	19	34,077.51	3.90	82.9
1924	15,873	1,107,766	112	26,465.20	1.66	69.8
1925	6,165	270,418	89	9,647.30	1.56	40.6
1926	18,397	350,621	690	13,541.89	.736	19.1
1927	14,098	463,853	3381	12,197.66	.865	32.9
1928	19,091	600,388	4340	10,753.77	.563	31.4
Totals	90,375	3,967,712	8631	\$133,353.78	1.47	43.9

(By States)

State	No. Acres Cleared of Ribes	Ribes Destroyed		Total Cost	Per Acre	
		Wild	Cult.		Cost	Ribes
Maine	0	-	-	-	-	-
N. H.	4605	218,971	566	\$1923.39	.418	47.5
Vt.	3123	34,254	-	1713.10	.549	10.9
Mass.	36182	1,293,652	4314	19050.46	.527	35.8
R.I.	781	6,226	70	124.00	.159	8.0
Conn.	4733	5,598	63	714.91	.151	1.2
N.Y.	40951	2,409,011	3618	109827.92	2.68	58.8
Totals	90375	3,967,712	8631	\$133353.78	1.47	43.9

The total cost of the work on public lands was paid from state funds, except \$317.25 federal money expended in Connecticut during 1928.

SUMMARY, BY STATES, OF ACREAGE RE-ERADICATED OF RIBES IN THE
NORTHEASTERN STATES DURING PERIOD 1923-1928, INCLUSIVE.

State	1923	1924	1925	1926	1927	1928	Totals
Maine	20	1,240	644	728	1,010	708	4,350
N.H.	630	6,668	41,734	32,046	74,034	83,201	238,313
Vt.	1,240	974	1,396	5,850	2,315	2,292	14,067
Mass.	16,943	1,311	4,256	6,145	14,942	15,875	59,472
R.I.	3,240	5,000	0	2,670	0	0	10,910
Conn.	0	0	2,370	570	8,836	1,124	12,900
N.Y.	0	0	0	0	0	10,395	10,395
TOTALS	22,073	15,193	50,400	48,009	101,137	113,595	350,407

No record of any re-eradication work prior to 1923. Detailed figures as to Ribes and costs are not available, except for 1926-1928, inclusive, and Ribes and costs figures are lacking for the 1926 re-eradication work in Massachusetts. A summary for 1928 is given in this report on pages 38 to 41 .

SUMMARY OF STATE COMPENSATION PAID YEARLY FOR CULTIVATED RIBES
DESTROYED IN NEW ENGLAND AND NEW YORK DURING THE PERIOD 1922-1928, INCLUSIVE.

(By Years)

Year	Total Number Cultivated Ribes Removed	Number Bushes For Which Compensation Was Actually Paid	Number Persons Receiving Compensation	Amount Paid in Reimbursement
1922	16,061	727	50	\$289.49
1923	55,074	1,490	59	574.37
1924	73,858	6,106	84	1572.11
1925	49,458	1,310	46	506.91
1926	51,471	4,023	24	1149.60*
1927	48,738	4,544	143	1731.96
1928	58,223	3,673	200	\$1448.19
TOTALS	362,883	21,873	606	\$7572.63

(By States)

State	Total Number Cultivated Ribes Removed	Number Bushes For Which Compensation Was Actually Paid	Number Persons Receiving Com- pensation.	Amount Paid in Reimburse- ment.
Maine	78,988	0	0	0
N. H.	67,250	508	20	\$123.76
Vt.	5,192	1277	106	620.16*
Mass.	178,806	17617	252	5987.80
R.I.	7,816	94	7	35.85
Conn.	6,281	0	0	0
N. Y.	18,550	2377	221	\$805.06
TOTALS	362,883	21873	606	\$7572.63

*In addition, during 1926, individual cooperators in Vermont paid \$82.00 compensation to 9 owners of cultivated Ribes for the removal of 164 bushes.

In Massachusetts, during 1928, 96 persons claimed \$1140.90 for the destruction of 2746 bushes. These claims will not be settled until the spring of 1929. However, this Massachusetts data are included in the above table.

EXPENDITURES - EASTERN CONTROL PROGRAM

Calendar Year	Federal	State						Grand Totals
		State Appropriations	Nursery Funds	Towns	Individuals	All Others	Total	
1922	\$77,377.30*	\$93,537.07*	\$500.00	\$17,700.33	\$26,512.49	-	\$138,249.89	\$215,627.19
1923	118,808.49	113,069.81	500.00	40,140.11	40,969.47	\$6139.10	200,818.49	319,626.98
1924	122,831.96	117,121.46	882.50	48,022.14	45,698.43	7125.03	218,849.56	341,681.52
1925	131,098.84	100,352.25	753.31	40,351.31	39,720.06	1695.47	182,872.40	313,971.24
1926	130,268.07	105,917.41	614.58	41,223.95	44,254.88	2027.44	194,038.26	324,306.33
1927	132,460.90	120,566.14	3213.41	38,299.74	49,040.81	1767.50	212,887.60	345,348.50
1928	131,129.82	125,671.02	3993.17	39,038.73	54,667.68	627.19	223,997.79	355,127.61
TOTALS	\$843,975.38	\$776,235.16	\$10,456.97	\$264,776.31	\$300,863.82	\$19,381.73	\$1,371,713.99	\$2,215,689.37

*Figures for 1922 Federal and state appropriation expenditures taken from summary prepared by C.J.P. - 5/1/28.

RIBES ERADICATION WORK ON WHITE MOUNTAIN NATIONAL FOREST
1924-1928, Inclusive.

(Data from Mr. Yarnall's letters of 12/22/27 and 1/14/28 to E. C. Filler)

Year	Acreage Examined	Ribes Pulled	Total Cost	Per acre	
				Ribes	Cost
1924	4,944	61,516	\$1,702.96	12.4	\$.363
1925	466	49,619	\$310.63	106.5	.667
1926	748	20,071	\$154.92*	26.8	.207
1927	226	11,350	\$102.73	50.2	.455
TOTALS	6,384	142,556	\$2,271.24	22.3	\$.356

*The State of New Hampshire paid \$12.38 of this expense.

Note: The scouting costs during 1924 were abnormally high, being based on actual expenditures for salaries and expenses of Hodgkins and Black, who cost much more than ordinary scouts. Also, there was possibly some duplication of effort in using two scouts, but this was unavoidable, as Hodgkins was training Black in field methods.

No work done during 1928.

SUMMARIES OF TOWN AND INDIVIDUAL COOPERATION
IN NEW ENGLAND AND NEW YORK DURING PERIOD 1917-1928, INCLUSIVE.

Note: In the following tables, the amounts listed for individual cooperation do not agree with those given in the preceding Ribes eradication summaries, due to the fact that the control tables include only individual funds expended in eradicating Ribes, while the following summaries represent all expenditures by individuals. A single exception occurs in the following New York summary, which does not include \$3664.20 spent by individuals in 1922 on unsupervised Ribes eradication work.

SUMMARY OF TOWN AND INDIVIDUAL COOPERATION
IN NORTHEASTERN STATES DURING PERIOD 1917-1928.

Year	No. Individual Cooperators		Amount Spent By Individual Cooperators	No. Towns Appropriating	Amount Appropriated
	Cult. Ribes Erad. Only	Wild & Cult. Ribes Erad.			
1917	-	5	\$42.86	-	-
1918	-	16	\$6133.45	43	\$7,200.00
1919	-	55	\$11,960.56	38	\$6,310.00
1920	-	168	\$9,650.14	51	\$8,500.00
1921	-	142	\$12,852.07	34	\$5,550.00
1922	-	971	\$26,512.49	59	\$19,827.86
1923	698	1968	\$40,969.47	122	\$36,380.00
1924	1714	3059	\$45,698.43	147	\$47,352.81
1925	958	3069	\$39,720.06	132	\$40,989.90
1926	741	3283	\$44,254.88*	123**	\$40,425.00**
1927	894	3537	\$49,040.81	125	\$38,133.40
1928	991	3390	\$54,667.68	145	\$41,126.60
Totals	5996	19,663	\$341,502.90	1019	\$291,795.57

*Includes \$82. spent by individuals in Vermont for cultivated Ribes compensation.

**In five additional towns in Maine (not appropriating in 1926) \$548.77 was available for control work from balances of 1925 appropriations.

(Northeastern States composed of New England and New York)

SUMMARY OF TOWN AND INDIVIDUAL COOPERATION IN
BLISTER RUST CONTROL WORK IN MAINE 1917-1928.

Year	No. Individual Cooperators		Amount Spent By Individual Cooperators	No. Towns Appropriating	Amount Appropriated
	Cult. Ribes Erad. Only	Wild & Cult. Ribes Erad.			
1917-1920	-	-	-	-	-
1921	-	30	\$1,163.07	-	-
1922	-	464	\$4,409.32	8	\$1,300.00
1923	58	1090	\$8,760.34	39	\$7,115.00
1924	94	1607	\$10,619.56	49	\$8,154.25
1925	47	1548	\$9,337.30	51	\$8,000.00
1926	168	1317	\$9,612.67	40*	\$6,725.00*
1927	138	1234	\$9,324.06	43	\$8,277.00
1928	40	1050	\$9,567.09	61	\$10,717.00
Totals	545	8340	\$62,793.43	291	\$50,266.25

*In five additional towns (not appropriating in 1926) \$548.77 was available for control work from balances of 1925 appropriations. Also, in four towns appropriating in 1926, \$47.51 was available from 1925 funds.

SUMMARY OF TOWN AND INDIVIDUAL COOPERATION IN
BLISTER RUST CONTROL WORK IN NEW HAMPSHIRE 1917-1928.

Year	No. Individual Cooperators		Amount Spent By Individual Cooperators	No. Towns Appropriating	Amount Appropriated
	Cult. Ribes Erad. Only	Wild & Cult. Ribes Erad.			
1917	-	5	\$42.86	-	-
1918	-	8	\$810.95	43	\$7,200.00
1919	-	34	\$2,053.65	38	\$6,310.00
1920	-	97	\$4,764.37	50	\$8,000.00
1921	-	23	\$2,688.51	31	\$4,350.00
1922	-	148	\$9,398.09	49	\$16,800.00
1923	-	121	\$7,635.45	82	\$28,765.00
1924	-	46	\$2,582.27	96	\$38,975.00
1925	-	30	\$2,090.76	78	\$32,725.00
1926	-	19	\$2,734.86	81	\$33,375.00
1927	-	45	\$3,722.34	77	\$28,800.00
1928	-	37	\$4,534.14	80	\$28,700.00
Totals	-	613	\$43,058.25	705	\$234,000.00

SUMMARY OF TOWN AND INDIVIDUAL COOPERATION IN
BLISTER RUST CONTROL WORK IN VERMONT
1917 - 1928.

Year	No. Individual Cooperators		Amount Spent By Individual Cooperators	No. Towns Appropriating	Amount Appropriated
	Cult. Ribes Erad. Only	Wild & Cult. Ribes Erad.			
1917-1918	-	-	-	-	-
1919	-	1	\$270.00	-	-
1920	-	29	\$515.61	-	-
1921	-	31	\$3,235.50	-	-
1922	-	125	\$5,502.22	-	-
1923	3	220	\$7,247.34	-	-
1924	27	246	\$7,392.74	1	\$100.00
1925	38	258	\$8,137.50	3	\$264.90
1926	53	162	\$7,923.94*	1	\$75.00
1927	15	118	\$7,106.05	3	\$56.40
1928	-	222	\$5,829.97	1	\$109.60
Totals	136	1412	\$53,160.87	9	\$605.90

*Includes \$82. expended by individuals for cultivated Ribes compensation.

SUMMARY OF TOWN AND INDIVIDUAL COOPERATION IN
BLISTER RUST CONTROL WORK IN MASSACHUSETTS
1917 - 1928.

Year	No. Individual Cooperators		Amount Spent by Individual Cooperators	No. Towns Appropriating	Amount Appropriated
	Cult. Ribes Erad. Only	Wild & Cult. Ribes Erad.			
1917-1918	-	-	-	-	-
1919	-	15	\$1,575.00	-	-
1920	-	31	\$1,877.22	1	\$500.00
1921	-	35	\$2,434.00	3	\$1200.00
1922	-	194	\$3,222.67	-	-
1923	586	470	\$6,894.90	-	-
1924	1564	980	\$11,527.04	-	-
1925	873	890	\$5,554.15	-	-
1926	507	1335	\$8,302.76	-	-
1927	678	1379	\$8,459.42	-	-
1928	951	1081	\$9,443.65	-	-
TOTALS	5159	6410	\$59,290.81	4	\$1700.00

SUMMARY OF INDIVIDUAL COOPERATION IN BLISTER
RUST CONTROL WORK IN RHODE ISLAND
1917 - 1928.

Year	No. Individual Cooperators		Amount Spent by Individual Cooperators
	Cult. Ribes Erad. Only	Wild & Cult. Ribes Erad.	
1917	-	-	-
1918	-	6	\$550.00
1919	-	-	-
1920	-	-	-
1921	-	-	-
1922	-	-	-
1923	34	1	\$15.36
1924	-	1	\$16.00
1925	-	-	-
1926	-	-	-
1927	-	-	-
1928	-	-	-
TOTALS	34	8	\$581.36

SUMMARY OF TOWN AND INDIVIDUAL COOPERATION IN
BLISTER RUST CONTROL WORK IN CONNECTICUT
1917 - 1928.

Year	No. Individual Cooperators		Amount Spent by Individual Cooperators	No. Towns Appropriating	Amount Appropriated
	Cult. Ribes Erad. Only	Wild & Cult. Ribes Erad.			
1917-1921	-	-	-	-	-
1922	-	2	\$760.29	2	\$1727.86
1923	17	9	\$867.45	1	\$500.00
1924	29	18	\$1139.51	1	\$123.56
1925	-	23	\$80.00	-	-
1926	13	80	\$1411.80	1	\$250.00
1927	3	47	\$1470.39*	2	\$1000.00
1928	-	34	\$1950.64	3	\$1600.00
TOTALS	62	213	\$7680.08	10	\$5201.42

*Includes cost of time of 20 individuals (\$29.75) who assisted in scout work in Connecticut. In addition, \$500. was raised by individuals in one town in Connecticut.

SUMMARY OF INDIVIDUAL COOPERATION IN
BLISTER RUST CONTROL WORK IN NEW YORK
1917 - 1928.

Year	No. Individual Cooperators		Amount Spent By Individual Cooperators
	Cult. Ribes Erad. Only	Wild & Cult. Ribes Erad.	
1917	-	-	-
1918	-	2	\$4,772.50
1919	-	5	\$8,061.91
1920	-	11	\$2,492.94
1921	-	23	\$3,330.99
1922	-	38	\$3,219.90
1923	-	57	\$9,548.63
1924	-	161	\$12,421.29
1925	-	320	\$14,520.35
1926	-	370	\$14,268.85
1927	60	714	\$18,958.55
1928	-	966	\$23,342.19
TOTALS	60	2667	\$114,938.10

SPECIAL TOTAL SUMMARIES OF RIBES ERADICATION
IN NEW ENGLAND AND NEW YORK.

BLISTER RUST CONTROL WORK IN THE NORTHEASTERN STATES

RIBES ERADICATION SUMMARY 1918 - 1928

STATE	Year 1918				Year 1919				Year 1920				Year 1921				Totals 1918-1921			
	Acres	No Ribes Wild	Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cost	Per Acre Cost/Ribes
MAINE	549.0	91,863	2,357	577.92	397.6	333,775	—	—	102.83	176,788	426	449.40	563.04	708	33,877.6	0.82	32	180,630	658,729	157.8
N.H.	629.8	85,321	2,601	260.88	434.3	1,594,936	2,171	3,298.35	204,049	2,061,996	3,224	3,864.48	1,854.44	913	21,873.07	15.12	159	12,000	571,625	6,577
V.T.	469.8	78,563	77	512.64	246.0	96,749	—	—	450.1	36,294	74	379.14	603.37	131	344.01	5.45	978	17,978	2,721.43	282
MASS.	2,826.6	356,667	17,181	181.65	1,084.9	201,112	2,374	8,561.75	1,938.9	1,224,906	1,421	1,048.20	632.618	4,631	102,705.4	31.31	192.0	81,877	2,414,873	10,365
R.I.	1,221.5	19,927	442	352.79	404.1	45,320	1,457	5,605.74	233.64	5,973	1,550	1,796.42	16.26	2,697	1,603.2	1.42	39	103,261	812,422	4,285
CONN.	800	10,000	—	—	2,500	31,000	0	—	2,170	48,793	2	1,074.70	8,000	41,470	6	2,664.07	31	13,470	1,262.63	8
N.Y.	29,937	904,153	10,000	436.78	23,194	2,812,861	2,675	75,686.08	7,067	6,955,853	47	2,439,118	346,986	8,474	730,573	14	22,576.53	68,062	451,184	13,736
TOTALS	13,745.8	2,413,887	22,150	99,388.20	72,188	252,043	45,499.48	22,177	137,117.05	54,182	270,657	42,439.83	25,736	84,843.80	31	158	376,745	319,196	15,755	68,093

STATE	Year 1922				Year 1923				Year 1924				Year 1925				Year 1926					
	Acres	No Ribes Wild	Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cost	Per Acre Cost/Ribes		
MAINE	190,809	44,828	2,688	801.24	201,243	336,452	12,095	19,333.16	401,227	1,846,957	11,599	2,309.39	171,001.5	150.41	2,025,621.073	6.2	30,443.7	310,637.9	175.62	21,480.01	707.102	
N.H.	178,803	181,682	9,661	2,870.60	159,100	2,168,217	3,467.33	24,779	326,468	4,037.01	14,989	5,283,785	32,443.92	4,402.44	446,141.97	19.12	20,958.5	107,838	42.89	45,452.75	271.448	
V.T.	1,357.2	201,906	812	615.02	451,150	2,190	2,785.70	123.4	2,568	102,154	592	92,000.05	317,837	640	905,812	3,401.11	2,265.0	2,577.43	1,404	10,858.44	453.114	
MASS.	6,430.2	157,824	236	137.57	201,243	1,776,107	14,887	2,041.11	15,977.6	202,503.6	9,977	9,472.18	75,183.0	336.01	2,175,945.111	3.8	18,923.0	108,803.9	2,574	27,281.37	144.57	
R.I.	11,500	117,64	132	184.00	16,102	31,308	14,875	1,664	52,480	2,471.1	2,953	2,302.01	4,944	1,928	151,904.059	0.1	28,207	176,335	203	142,423	649.06	
CONN.	6,175	177,501	0	445.50	753,822	14,662	2,883.33	24.8	17,215	28,903.4	2,447	5,981.73	7,279.7	684	5,495.30	3,411.69	22,257	18,826	390	50,62.35	227.82	
N.Y.	11,030	154,231	94,082.42	309.42	13,459	90,661.7	2,67	4,229.78	25,198	106,196.8	2,501	40,907.02	162,481	3,493.7	944,865.1153	35,787.36	38,073	107,734.0	208	371,29.76	775.283	
TOTALS	476,662.1	484,981.2	16,061	96,818.37	201,07	842,439	79,691.7	55,074	1,608,837	1,6	90	100,042	9,466.27	17,858	16,175.52	167	94	834,428	72,866.70	5,948	148,382.71	182.10.8

STATE	Year 1927				Year 1928				Totals 1922-1928				Grand Totals 1918-1928						
	Acres	No Ribes Wild	Total Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Total Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Total Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Total Cost	Per Acre Cost/Ribes			
MAINE	26,148.1	260,430	10,325	2,257.31	08,944	203,067	5,957.97	8,778	2,859,799	11,79	197,155.1	137,088.79	970.64	2,152.81	3,178,280	80,867	3,156,796	93	701.6
N.H.	12,579.1	260,816	2,570	409.70	82,118	2,168,530	3,902,584	3,220	28,444.96	179.10	699,740	305,077.76	179,122	2,271,363	27,001,787	2,874.7	42,181,755	186.21	186.21
V.T.	1,940.5	280,781	314	82.84	474,144	1,476	159,240	196	6,881.37	401.95	1,498.34	583,605.7	390,112	1,678.12	1,950,474	5,474	72,613.08	437.6	437.6
MASS.	29,423.8	903,583	1,753	2,572.62	087,207	2,390,333	5,213,360	3,873	26,285.91	11.22	13,437.01	177,756.02	132.64	1,425,578	11,059,127	189,151	22,243,092	5.78	5.78
R.I.	973	22,279	521	1700.86	17	21,461	17,777	615	262,464	9,083	180,331	138,117.4	077.06	2,833.92	194,461.7	2,067	30,573.27	6.6	6.6
CONN.	2,904	52,825	12.08	833.20	473.73	75,105	123,181	1,344	8,138.4	107.6	71,824	4,470.106	2,608.4	185.294	157,196.4	62.89	5,166.3	17	2.8
N.Y.	62,935	1,101,646	2,007	452,23.96	753,324	45,849	97,776.9	12,285	5,608.43	52,800.4	2,935.01	2,982,65.74	102,484	361.5	2,574,668	32,286	45,860,948	10	10
TOTALS	89,451.8	2,574,987.8	153,302.41	171,89	879.8	6,677,461	22,245,800.675	20,16	580,048.4	53,131,205	362,843	1,025,061.67	177.92	4,837,385	67,530,440	454,601	141,444.4	2	2

SUMMARY OF RIBES ERADICATION WORK IN NEW ENGLAND AND
NEW YORK DURING PERIOD 1917-1928.

(By Years)

Year	Acres Eradicated	Ribes Destroyed		Total Cost	Per Acre Values	
		Wild	Cult.		Ribes	Cost
1917	262,562	861,353*	69,514	\$65,481.24**	3.3	\$.371
1918	137,458	2,413,887	22,150	99,388.20***	18.8	.72
1919	252,043	4,549,948	27,877	137,117.05	18.2	.54
1920	270,657	4,243,983	25,936	84,843.80	15.8	.31
1921	376,745	3,191,967	15,755	68,093.70	8.5	.18
1922	476,621	4,849,812	16,061	96,818.37	10.7	.20
1923	892,639	7,969,917	55,074	160,883.37	9.0	.18
1924	1,008,042	9,466,271	73,858	169,175.52	9.4	.167
1925	834,428	7,296,670	59,458	138,491.86	8.7	.166
1926	814,439	8,838,000	51,471	148,382.91	10.8	.182
1927	894,501	8,032,574	48,738	\$153,302.41	8.9	.171
1928	879,812	6,677,961	58,223	158,006.73	7.6	.180
TOTALS	7,099,947	68,392,343	524,115	\$1,479,985.66	9.6	.211

*No Ribes figure for Connecticut in 1917.

**No cost figure for Massachusetts in 1917.

***No cost figure for Connecticut in 1918.

NOTE: Connecticut acreage for 1917 omitted in obtaining per acre Ribes figure for 1917 and grand total.

Massachusetts acreage for 1917 omitted in obtaining per acre cost figure for 1917 and grand total.

Connecticut acreage for 1918 omitted in obtaining per acre cost figure for 1918 and grand total.

(Summary does not include work done on White Mountain National Forest)

